Household saving behaviour in developing countries: the case of Vietnam

By

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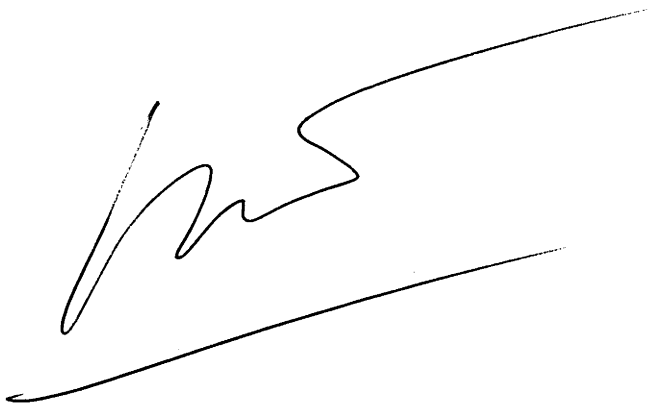
Declaration

This thesis contains my own work except

where otherwise indicated.



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I would like to dedicate this dissertation to my parents, my wife and my daughter for their love and endless support and inspiration during my years of study in Australia.

Abstract

Understanding the driving forces behind household saving helps shed light on the problem of mobilising capital for domestic investment. This dissertation examines the determinants of saving, wealth and the structure of asset holdings of households in Vietnam.

The dissertation offers a simple model of the Life Cycle Hypothesis and Becker-style home production function for analysing saving behaviour of an extended household in a developing country like Vietnam. Econometric models are used to test the hypotheses of the theoretical model and to establish empirically the relationships between the saving determinants and the levels of saving and wealth of households. The estimations of saving models are conducted for different groups of households. The structure of asset holdings of households is considered. A multinomial logit model is used to test some hypotheses regarding the types of asset holdings of households.

The results suggest that a wide range of factors have an impact on saving and wealth of households. It is found that the marginal propensity to save out of income of households in Vietnam is relatively high compared with the typical level of developing countries. Groups of households in urban areas and in the south, that have a higher per capita income level, are found to have a higher marginal propensity to save than those in rural areas and in the north, respectively. Households in Vietnam hold assets most in gold and dollars, not in banking and financial institutions. The asset and income levels of households as well as regional and urban/rural factors are found to have an impact on the ways households hold

different types of assets. While raising the income level plays a crucial role in raising household saving in both flow and stock terms, higher income seems not always to lead to higher financial saving of households in the banking and financial institutions. The findings of the dissertation have a number of implications for short and long-term saving policy in Vietnam.

Table of contents

List of tables

List of figures

Acronyms

2SLS	Two-stage least squares
AIH	Keynesian Absolute Income Hypothesis
ASEAN	Association of South East Asian Nations
AusAID	Australian Agency for International Development
BIDV	Bank for Investment and Development of Vietnam
CMEA	Committee of Mutual Economic Assistance
FDI	Foreign direct investment
GDP	Gross domestic product
GSO	General Statistics Office of Vietnam
IIA	Independent from irrelevant alternatives
IMF	International Monetary Fund
LCH	Life Cycle Income Hypothesis
LDCs	Less-developed countries
MNL	Multinomial logit model
mps	Marginal propensity to save
NIEs	Newly industrialising economies
NCDS	National Centre for Development Studies
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary least squares
PIH	Permanent Income Hypothesis
SOE	State-owned enterprise
VLSS	Vietnam Household Living Standards Survey

Glossary

For Tables

p.a	Per year (annual)
..	Not available
-	Zero

Currency Equivalents

Currency Unit		Vietnamese dong
US$1.00	=	VD 11,018 (as of March 23, 1996)

Fiscal year

January 1 – December 31

Chapter 1

Introduction

1.1 Introduction

The linkages between saving, investment and development of a country have long been recognised. Domestic saving is generally assumed to be one of the key sources of investment. The well-known Feldstein and Horioka puzzle of the saving-investment relationship was discovered in the early 1980s. Feldstein and Horioka (1980) reasoned that, in a world of perfectly mobile capital, domestic saving would seek out the highest return in the world capital market independent of local investment demand, and thus it is expected that the correlations between domestic saving and investment rates among developed countries should be low. However their study revealed a surprising result: there was a high and significant investment-saving correlation. That means changes in domestic saving passed through almost completely into domestic investment suggesting imperfect international capital mobility. If such a result remains true with new data and with longer historical periods, this would imply that the nexus of saving and investment in developing countries, where the level of mobility of capital is lower, should be more important.

Table 1.1 confirms the close relationship between saving and investment in developing countries in the last two decades. Their match is most obvious for countries in Asia and Latin America. The developing world as a whole has relied on foreign saving at a very small fraction of their GDP, about 1.5 per cent. This means that about 6 per cent of

investment of developing countries has been financed by the rich countries. Although the Asian developing countries have constantly relied on foreign saving during the last two decades, the amount of 0.5 per cent of GDP of net lending has been quite modest, compared to the corresponding figure of 4-5 per cent for the countries in Africa.

Table 1.1 Saving and investment in developing countries (per cent of GDP)

	1973-80	*1981-89*	*1990-94*
Africa			
Saving	26.5	18.5	16.9
Investment	31.7	22.9	21.6
Net lending	-5.2	-3.4	-4.7
Asia			
Saving	25.5	28.1	31.4
Investment	26.0	28.6	31.9
Net lending	-0.5	-0.5	-0.5
Latin America			
Saving	20.5	19.4	18.3
Investment	23.8	20.5	20.4
Net lending	-3.3	-1.1	-2.1
Middle East and Europe			
Saving	34.5	21.1	19.4
Investment	24.4	23.1	23.0
Net lending	10.1	-2.0	-3.6
Developing countries: Total			
Saving	25.7	23.1	25.6
Investment	25.7	24.6	27.2
Net lending	-	-1.5	-1.6

Source: International Monetary Fund (1995)

The economic successes of the East Asian countries which have both high domestic saving and high economic growth rates, provide good examples of the linkages between saving, investment and economic growth. While the ratios of saving and investment to GDP have

declined in most of the rest of the world since 1980, they remained relatively high in the countries of the Asia-Pacific region throughout the 1970s and 1980s. The East Asian newly industrialising economies (NIEs) attain some of the highest saving rates in the world that have been signified more by significant current account surpluses as a result of increasing exports. The other developing countries of ASEAN, such as Malaysia, Thailand, Philippines and Indonesia having more moderate domestic saving rates, are still well above 20 per cent (Table 1.2). While external debt has partially lowered national saving rates in Malaysia, Indonesia and Philippines, it is clear that domestic saving has played an important role in attaining high investment rates.

Table 1.2 Gross domestic saving and investment in the Asian-Pacific Region.

	Per cent of GDP			
	Saving average		*Investment average*	
	1971-80	*1981-90*	*1971-80*	*1981-90*
NIEs:				
Hong Kong	28.4	30.7	27.8	27.9
Republic of Korea	22.3	31.9	28.6	30.5
Singapore	30.0	42.5	41.2	42.0
Taiwan	32.2	32.9	30.5	22.6
Southeast Asia:				
Indonesia	21.6	32.0	19.3	30.4
Malaysia	29.1	33.0	24.9	30.8
Philippines	26.5	22.3	27.8	21.7
Thailand	22.2	24.4	25.3	26.7
People's Republic of China	35.8	33.5	33.9	34.3

Source: Asian Development Bank (1992)

Compared to the industrial countries, the saving rate of developing countries in East Asia as a whole is very high. In aggregate, with a combined GDP of about 6 to 7 per cent of world GDP, developing East Asia including NIEs, ASEAN and China, saved an average 33 per cent of their national income in 1993, compared to 19 per cent in the industrial countries (Ling and Peng 1996). The high saving rate is closely associated with rapid economic growth. Developing countries in East Asia grew nearly three times as fast as OECD countries over the last 15 years.

Vietnam found a good opportunity for rapid development, being located in the active Southeast Asian economic region, thus enjoying the positive effects of good economic relations with the countries in the region. Having suffered setbacks in its development from wars and economic crises in post war periods, Vietnam has aimed to achieve high economic growth and implement industrialisation to follow the path of rapid development of the countries in the region. In order to achieve these goals, since 1986 Vietnam has carried out a series of economic reforms, driving the economy to become more open and market-oriented. The economic reforms also include the formation and implementation of policies attracting foreign direct investment. However, to raise the needed investment and capital, attracting foreign investment alone is not enough. Domestic saving is also crucial. Because of the important role of domestic saving in investment and economic growth, this dissertation will focus on one component of domestic saving: household saving.

The household sector plays a very important role in Vietnam's economy. The other major sector is the government. There are few private companies because of residual attitudes and policies from the old centrally-planned economy which have discouraged the development

of this sector. The private sector consists mainly of family businesses. The household sector and private companies are normally referred to as the non-government sector. The contribution of households and private companies (non-government sector) to GDP was 55.2 per cent in 1993, while the contribution of the government sector was only 39.2 per cent, and the remaining 5.6 per cent was from the foreign sector. For the GDP created in the agriculture, fishery and forestry industries, the contribution of the non-government sector was 97 per cent. In terms of capital accumulation, the non-government sector contributed 53 per cent of total national capital accumulation (Vu Quang Viet 1996: 5). Since the renovation (Doi moi) was undertaken, households have been encouraged to participate more actively in varied economic activities. As a result, the income and saving of households have increased markedly. The saving rate (ratio of saving to GDP) of rural areas, where 95 per cent of GDP comes from the household sector and in which around 80 per cent of the population of Vietnam live, increased from 5.2 per cent in 1990 to 10.6 per cent in 1995. The saving rate of urban areas was 24 per cent in 1992 and increased to 27.6 per cent in 1994 (Nguyen *et al.* 1996).

Domestic saving needs to be increased for investment, industrialisation and economic development. However, a sensible policy for boosting saving requires a clear understanding of its determinants and of the capacity of the economy, especially households, to save. So far, little knowledge regarding household saving has been attained in Vietnam. In contrast to the rather extensive literature on household saving in industrial and developing countries, there is not yet a quantitative analysis of household saving at the micro-level for Vietnam. With more than 12 million households located mainly in rural areas, Vietnam has recently taken some significant steps towards mobilising the potential

of households and the private sector in production, raising living conditions and the saving of households. Thus, Vietnam can expect a significant contribution from the household sector in terms of this mobilised saving. The important role of household saving for domestic investment and industrialisation, and the present lack of knowledge about household saving in Vietnam have provided the motivation for this dissertation.

1.2 Objectives and approach of the dissertation

The main objective of the dissertation is to analyse the role of the factors which influence the household saving and wealth levels in Vietnam and the structure of household asset holding. The dissertation will focus on investigating the impact of household income and the number of dependent people in a household, and the impact of urban/rural areas and geographical regions on saving and wealth of households. In analysing the relationship between household saving and demographic factors, the dissertation will differentiate the effect of the number of young dependent people from the number of aged dependent people on household saving since their contributions to household income and their saving behaviour may be different. To ascertain the distinct effect of these factors, the dissertation will develop a simple theoretical model to provide a more rigorous rationale for the analysis. The effects of household income, assets and demographic factors on household saving will be examined for different types of households: young households and households with old people. The dissertation will test hypotheses relating to the significant role of the factors and the signs of the effect of these factors on household saving.

Since there are different economic and natural conditions across different geographic regions and between rural and urban areas, the dissertation will also try to analyse the factors that have a significant impact on household saving in these different regions and areas and compare these effects to each other. The dissertation will test the hypothesis that household groups that have a higher/lower per capita income level will have a higher/lower marginal propensity to save out of income.

The dissertation will show that while households in Vietnam may have a strong motive to save, they do not place this saving in the banks and financial institutions. Households in Vietnam prefer to save more in other forms such as gold and dollars. Other findings associated with studies on saving forms also will be presented to show that there are a number of factors that could affect the forms in which households hold their wealth.

The dissertation will use a simple theoretical model of the saving behaviour of an extended household, which is quite typical of an Asian developing country such as Vietnam, in order to analyse the factors influencing household saving. Econometric techniques will be used to test empirically the hypotheses drawn from the theoretical model and to quantify the effects of the factors on household saving. The empirical results obtained will be compared to the findings of the related studies. The dissertation will also quantify the effects of the factors on the level of wealth and probabilities of holding different types of assets of households.

The data for the empirical studies in this dissertation are taken from the Vietnam Living Standards Survey conducted by the World Bank, General Statistical Office and the State

Planning Committee of Vietnam between 1992 and 1993. It is a survey at the household and individual level with a sample of 4800 households located in all regions of Vietnam.

1.3 Structure of the dissertation

The Dissertation consists of eight chapters and is organised into four main parts – background (Chapters Two and Three), modelling (Chapter Four), empirical studies (Chapters Five, Six and Seven) and conclusions and policy implications (Chapter Eight).

Chapter Two presents the historical background of the renovation in Vietnam in the 1980s and the most important changes associated with the economic reforms in the second half of the 1980s and the early 1990s. The chapter will draw attention to the development of the household economy, household saving and national saving during the period of the transition to a market-oriented economy. Chapter Three reviews the literature on the theory of household saving and studies on household saving in developing countries.

Chapter Four presents a theoretical model for an extended household based on the Life Cycle Hypothesis and Becker-style time allocation model for a household (Becker, 1965). This chapter formulates the hypotheses for testing the role of the factors influencing household saving.

Chapter Five discusses the econometric models used to test the hypotheses and analyses the results of empirical studies. The chapter also compares our results with the findings of related studies in developing countries. Chapter Six examines the different conditions of

the different geographic regions and urban and rural areas and conducts empirical studies on household saving in these different regions and areas. Chapter Seven explores the effect of the factors that influence the level of wealth of household asset holding and analyses the effects of the factors on probabilities of holding different types of assets of households. The chapter also provides results to assess the capacity of household saving in contribution to domestic investment in Vietnam.

Chapter Eight summarises the findings of the dissertation. The chapter also discusses the relationship between policy and future saving outcomes and suggests further directions of research.

Chapter 2

Household economy, household saving and national saving during the period of transition

Vietnam began economic reform in 1986. The reform (renovation or *Doimoi*) was the result of two main factors, namely, the threat of an economic crisis in the early 1980s, and the influence of an economic reform movement originating in neighbouring China and the former Soviet Union. Of these two factors, one of an economic character and the other of a political character, the economic one seems to be more crucial. During the period of renovation, some significant steps toward the establishment of a free market have been undertaken that have helped the economy overcome its difficulties. The country has experienced some substantial structural changes and the economy has achieved some impressive growth rates. Some other macroeconomic indicators have also improved. Vietnam has become an exporter of a number of products which it previously had to import. The living standard of the population has been raised significantly.

This chapter will highlight some of the important changes implemented under the renovation, discuss the development of the household economy and the situation of saving at both the national and household levels.

2.1 The economy before and after the renovation at a glance

Historically, the planned economy in the north of Vietnam began in the 1950s following the model of the Soviet-style planned economy. Although this model was adapted to fit the conditions of Vietnam, its main features were ostensibly the same as other planned economies. These features may be characterised as follows:

Firstly, the government controlled directly almost all important economic activities through a system of planned production and allocation of economic resources and products. The price system for products, exchange rates and interest rates were fixed with strict regulations.

Secondly, with the goal of socialism that the economy should be led by the government and cooperative sectors, the government implemented policies to subsidise these sectors by providing capital investment and cheap credit. Means of production were owned by the government and cooperatives and the government held a monopoly in trade. The private sector was not encouraged to develop.

Thirdly, the market economy existed only at a very restricted level of small business and household economy. The products sold and purchased in the market were restricted to goods and services of the household economy while the production means for economic entities were not tradeable and were state-owned. The resources were allocated strictly according to government plans. Labour was mostly immobile. Salary, payments and the

distribution system of consumption products were managed by the government to meet the demands of life of the labour force in the government and the cooperative sectors.

Fourthly, state-owned enterprises were entirely government financed. Therefore, the government subsidised the enterprises that made losses in business while taking almost all the profits of the profitable ones. The government also subsidised the activities of the enterprises by selling low-price materials and equipment that were financed by government borrowing and various kinds of economic aid. As a result, economic growth, if there was any, was accompanied by government deficits and huge government debts.

Although these policies had an advantage in helping the government to centralise resources to deal with the war and post-war conditions in the sixties and seventies, they quickly became inadequate as the country proceeded to a reconstruction phase in peace time. The centralised and planned distribution system, the system of subsidising capital and credit, the way of separating profit and loss of production entities from salary and payments of workers, did not create the motivation for people to devote much effort to work. In such a system, the creativity and dynamism of workers was stifled.

Stagnation and worsening economic conditions became more obvious not long after the reunification in 1975. Over-optimistic subjectivism prevailed among the politicians who considered that management of the economy was not as difficult as fighting a war. The aid flows from the former socialist countries, which had played a very important role in government budgets, fell significantly in the period 1979-80. As a result, almost all of the objectives of the five-year plan 1976-80 were not achieved. In some industries, less than

half of the plans could be met. Table 2.1 shows the contrasts between the planned and the actual growth rates during the five-year plan 1975-1980. The actual growth rates were very far below the high rates that were planned, especially for the industry sector. The target growth rate was 16-18 per cent while the actual was only 0.6 per cent. These figures highlight the predicament of Vietnam at that time.

Table 2.1 Annual growth rates of the five-year plan 1975-80 (per cent)

	Target	*Actual*
National Income	13-14	0.4
Agriculture	8-10	1.9
Industry	16-18	0.6

Source: Le Dang Doanh (1994)

The apparent crisis in the economy brought pressure to change economic policies. Although the goal of socialist transformation was retained, for the first time the concept of efficiency of doing business and management was mentioned. This led to some market-oriented changes in the industrial and the agricultural sectors, thus reducing the extent of planning in the economy.

In manufacturing industries, some "off plan" economic activities of enterprises were allowed to exist for the first time since collectivisation, implying a loosening of administrative management from the central government. Those activities were possible with a so-called "Three-Plan System". Under Plan One, the enterprises, with inputs at

subsidised price, were required in return to supply products to the government. Plan Two allowed the enterprises to produce an excess amount to that specified in Plan One and to use revenue to buy additional inputs. Plan Three allowed the enterprises to operate on a free market basis. This system gave some freedom and flexibility for enterprises to operate and at the same time was able to link the final products with profits and payments to their workers. Enterprises were able to have a horizontal business relationship with other entities instead of having only a vertical relationship as before. This change encouraged enterprises to work more efficiently.

The agricultural sector also experienced some decentralisation. One step was the introduction of the "contract system". Before, when compulsory collectivisation was implemented, peasants worked in organised production cooperatives and were paid according to the amount of work they contributed. That system was called the "work-points" system: working days and jobs done by cooperative members were marked by points and, at the end of crop harvests, distribution of products was implemented in accordance with the accumulated points. Under the slogan of collective ownership, members of cooperatives did not own any land and were just permitted to farm up to 5 per cent of the total land of the cooperatives for their own private purposes. Under this system, there was no motive for cooperative members to contribute much. They put all their effort into the five-per cent "private" land that often brought them a significant source of income.

The "products-based contract" system, often called "Contract 100", which existed from 1981, still had large elements of planning. According to "Contract 100", among eight phases of producing agricultural products, farmers were responsible for three phases -

planting, tending and harvesting - and cooperatives were in charge of the remaining phases, among which were allocation of land, supplying inputs and providing technical assistance. Under the "contract system", a certain quantity of output – quota - was placed under contract between household units and cooperatives. After supplying the quota to cooperatives, households were allowed to keep or trade any output in excess of their quota.

Along with the changes in industry and agriculture, in the domestic market, there appeared a "two-price system" for trading goods: one was the "subsidised system" and the other was the "free market". The free market in factors of production and industrial and agricultural products flourished and expanded. To some extent, the monopoly role of the government in trade was reduced in this period.

Although the changes which took place in various sectors were very important in terms of beginning a new way of thinking and practice, it appeared that these changes were only half way measures or "piecemeal economic reform" (Riedel and Comer 1996). The economy still mainly ran under a system of administrative management and subsidisation. Macroeconomic policies (such as price, tax and credit policies) were inadequate. Economic efficiency had not been the primary objective, and as a result, after a short period of a modest increase of output and growth, Vietnam began to experience another crisis. The inflation rate rose to nearly 100 per cent in the period 1982-83 and became hyperinflation of 500 per cent by 1986 (Le and McCarty 1995). The government faced high budget deficits and balance of payment problems. The contradictions between the demand for having more freedom to do business and the inadequate macroeconomic and institutional policies became more and more serious leading to the need for radical change.

The renovation policies started taking shape at the Sixth Congress of the Communist Party of Vietnam in 1986 and continued to be supplemented by subsequent conferences and a macroeconomic stabilisation program implemented later in 1989-92. These policies have helped to drive the economy in a positive direction and have yielded significant achievements. The policy changes and the economic achievements in the period of renovation can be classified as follows:

First, a move to a mixed economy, in which the government, cooperative and private sectors coexisted with equal rights[1] was adopted. In effect, discrimination against the private sector, at least ideologically, was removed. The government sector was also put into equal competition with other sectors.

Second, the existence and the role of markets was accepted. Under a new economic viewpoint, accepting the role of the market in resource allocation appeared to be very important in terms of ideology. There emerged the concept of a "market economy with socialist orientation" in this period.

Third, a restructuring of the economy took place to mobilise resources to pursue the major goals: agricultural development, consumption goods expansion, export improvement and foreign trade expansion. The state monopoly of foreign trade was eliminated and many

[1] The multi-sectoral economy in Vietnamese literature often refers to the different types of ownership over the main production means. There are five economic sectors: state, cooperative, private and household, government capitalist, private capitalist (Vu Tuan Anh 1994). However, because the last two sectors are small, the state, cooperative and private sectors (or, in some studies, only government and private sectors) are often referred to as the whole of the economy.

entities were allowed to undertake direct international trade. A legal framework was also provided to assist the restructuring process with new laws such as the Law on Export and Import Duties on Commercial Goods in 1987, the Foreign Investment Law in 1988. In the financial and banking system, besides the State Bank, the system of commercial banks replaced the monobank system in 1988[2]. Macroeconomic policies have been introduced using "shock therapy" to stabilise the economic and social environment such as liberalisation of prices, reduction of macroeconomic imbalance, raising interest rates, devaluing and unifying the exchange rate, tightening money policy leading to a significant decline in inflation and accelerating the transition process toward a market economy.

Fourth, further steps toward the abolition of central planning were taken in industry and agriculture. The plan targets for state owned enterprises were reduced significantly. The centralised control of output and prices was dismantled. Enterprises were given full rights and responsibility for their own production, sale of products and financial decisions. Restructuring, mergers and privatisation (sometimes called equitisation) have been largely accepted by the state-owned enterprises.

Under renovation, there was a substantial change in terms of ownership in agriculture: household farms were allowed to lease land from the State for long periods. In fact, the transfer of farm land management was a rather long process. After several years of implementation, the "Contract 100" system was already seen to be flawed: there were

[2] Before 1988, the State Bank played the role of both Central Bank and commercial bank. After that year, there appeared four state-owned commercial banks, which specialised in lending activities such as agriculture, industry and commerce, construction and foreign trade. Up until the end of 1993, there were about 35 banks, one insurance company and two financial companies (World Bank 1993b). However, most of the private banks and financial companies were small with 90 per cent of total outstanding bank loans held by the state banks (Le Dang Doanh 1994).

unstable contractual levels and the management mechanism of cooperatives basically remained centrally administered and had many irrational functions. As a result, economic resources were still subject to constraints and not fully liberalised.

In April 1988 this system was replaced by the new system of contracts – the "Contract 10" system- named after the resolution number of the party conference dealing with agricultural issues. This was a first step towards inducing farmers to invest in land under their own management. According to this new contract system, farmland was contracted for a long and stable term to households and could be exchanged. The rental period of land ranged from 5 to 15 years. Factor inputs and cattle of the cooperatives were sold to farmers.

The Land Law in 1993 was a further step toward the liberalisation of land. According to the Land Law, land and certificates for land use rights were given to households on long-term and permanent bases. This law allowed farmers to exchange, mortgage, inherit, lease and transfer land on long-term leases of up to 75 years. The new land system was welcomed by households, especially the farm households. With this new system of land, farm households were recognised as fully independent economic units that operated their own land and resources. The implementation of the Land Law not only actively affected production development but also helped to solve the problem of inefficient use of land in the rural areas. The Land Law also meant the end of the old style cooperatives. Thus, exclusive land user rights were established giving farmers the incentive to make production decisions and allocate resources in a more efficient manner.

After the economic reform was instituted, the economy experienced significant changes and prospered. Table 2.2 shows some achievements of the whole economy and by sectors in the period 1988-96.

Table 2.2: Annual GDP growth in the period 1988-96 (per cent)

	1987	*88*	*89*	*90*	*91*	*92*	*93*	*94*	*95*	*96*
Real GDP	3.7	5.9	7.8	4.9	6.0	8.6	8.1	8.8	9.5	9.3
Industry and Construction	8.8	5.3	-4.0	2.9	9.0	14.0	13.1	14.0	13.9	13.5
Agriculture and Forestry	-0.6	3.9	6.9	1.5	2.2	7.2	3.8	3.9	4.6	4.8
Service	5.5	9.2	17.6	10.4	8.3	7.0	10.2	10.9	10.9	8.9
Inflation rate	231.8	393.8	34.7	67.5	68.1	17.5	5.2	14.4	12.7	..

Sources: General Statistical Office (1996) and World Bank (1997)

Except for the period 1987-89, when the struggling economy still suffered the consequences of the pre-reform period, the trend of real GDP growth in the period up to 1996 was very strong. The outputs of both industry and agriculture had each been increasing at a high and stable rate. According to Tran Hoang Kim (1996), food production rose from 21.5 million tonnes in 1989 to nearly 27.5 million ton in 1995 and transformed Vietnam to a large rice exporter selling about 1.5 to 2 million tonnes yearly on world markets. Inflation fell substantially from three figures to 10 per cent annually. These achievements are all the more impressive if one considers the fact that from the beginning

of the 1990s, Vietnam received no external economic aid from the former Soviet Union or other former socialist countries.

This brief outline of the period 1980-1985 and the reforms in policies showed that the achievements during the period 1986-1996 were very encouraging. These changes were primarily the result of the process of decentralisation and decollectivisation, which has given individuals more freedom to make economic decisions. As a consequence, individuals are motivated to work harder and manage production more efficiently. The achievements of the economy also showed that a more radical economic reform package could be successful and provide the basis for a significant improvement in economic performance.

2.2 The household economy and the private sector in the period of transition

With a population of around 80 million people, 80 per cent of whom live in the rural area, and with about 73 per cent of the labour force engaged in the agro-forestry sector, Vietnam is an agricultural economy. Rice farming is the primary activity of the majority of the population. Agriculture therefore is the main sector of the economy. Because the development of the household sector is very much related to the development of cooperatives in agriculture, it is useful to assess the transformation of the cooperatives in the transitional period.

2.2.1 Development of the collective organisations

In the past, the process of collectivisation occurred earlier and more extensively in the north and with much less success in the south of Vietnam. Up until the middle of the 1980s, there were about 17000 cooperatives in the north and only 1518 cooperatives and 9350 production groups in the south (Vu Tuan Anh 1994: 26). The difference between the level of collectivisation in the north and south may have influenced the speed of the reverse process – decollectivisation. As one would expect, the dismantling of cooperatives in the south was to happen more quickly than in the north. On the whole, the decollectivisation process during the renovation has had a considerable influence on the life of households in both the north and the south of the country.

The cooperative system suffered from several inherent weaknesses. The most serious of these was the absence of incentive for the individual to work hard under a common ownership regime. In addition, in agriculture, the management of the cooperatives was often cumbersome and very poor, often resulting in inefficient use of land. This poor management and the system of valuing the contribution and work of cooperative members by points were found to be inappropriate and separated their interests from the final products.

Under the new contract system, the role of cooperatives was reduced substantially, allowing an increased role for households. Besides the dismantling of some cooperatives, there was some transformation of others. In agriculture, for example, a new type of cooperative organisation emerged that supplied technical services for households. Some

other cooperatives became a type of shared company working on the basis of contributed capital. Shared companies also began operating in the sectors of manufacturing industry and services.

Table 2.3: Number of cooperatives and private business units in the manufacturing industry in Hanoi, 1988 – 91.

	1988	*1989*	*1990*	*1991*
Cooperatives	558	442	329	285
Production group	1817	1226	1063	847
Multi-functional Cooperatives	835	2147	214	107
Private enterprise		27	40	23
Household business			6172	7418
Total	3110	3822	7818	8681

Source: Hoang Kim Giao (1993: 31)

The general decline of the cooperatives sector has been widespread. To illustrate, the number of cooperatives in industry alone fell by 70.7 per cent with the labour force reduced by 72.3 per cent from 1981 to 1991. Similarly, during 1986-91 the share of value of the cooperatives in the total value of goods and services shrank from 14.6 per cent to 1.8 per cent (Vu Tuan Anh 1994: 29). In some industrial locations, the number of cooperatives declined in absolute terms despite obvious growth in the value of industrial products. Table 2.3 shows the process of development of cooperatives and private businesses (including household businesses) in industry in Hanoi, one of the industrial centres of the country. The table also shows that while the total number of non-government business units

operating in industry was increasing, the number of industrial and production cooperatives fell significantly.

Table 2.4: Shares of gross industrial product by economic sectors

Economic sectors	*1986*	*1987*	*1988*	*1989*	*1990*
State	56.3	56.0	56.5	57.0	59.8
Cooperatives and Production Groups	28.1	27.1	23.9	15.8	13.7
Private and households	15.6	16.9	19.6	27.2	26.5
Total	100	100	100	100	100

Sources: Nguyen Quy Luyen (1993: 63).

Other cities such as Ho Chi Minh City and Haiphong also experienced the same trend with the number of cooperatives substantially reduced. Table 2.4 again shows the declining trend of the industrial production share of cooperatives and production groups (a form of cooperative on a smaller scale) for the whole economy. This trend suggests a gloomy future for such socialist-style common-ownership forms of production.

2.2.2 The private sector and the household economy

In contrast to the shrinking cooperatives, private and household business has seen a visible expansion. Both Tables 2.3 and 2.4 show the clear trend of this expansion of the private

and the household sector. In a period of just five years from 1986 to 1990, the share of the private and the household sector nearly doubled compared to a modest increase in the share of the state and a falling share of the cooperatives and the production groups.

Table 2.5: Share of industrial production, by types of enterprise (per cent)

	1989	*1990*	*1991*	*1992*	*1993*
State-owned enterprises	66.4	67.6	68.5	70.5	71.3
Non-state-owned enterprises:	33.6	32.4	31.5	29.5	28.7
- Cooperatives	35.3	28.2	15.3	9.6	8.6
- Private enterprises	3.1	3.0	4.7	9.6	10.8
- Family firms	61.7	68.8	80.0	80.7	80.6
Total	100.0	100.0	100.0	100.0	100.0

Source: World Bank (1995a)

Since the reforms, the private sector has become more dynamic and has flourished, especially in services and retail. The proportion of revenue of the private sector to the total revenue in services and retail substantially increased from 41.2 per cent in 1985 to 73.1 per cent in 1991 (Vu Tuan Anh 1994: 31). As this sector emerged, businesses took various forms, from shared holding companies, joint stock companies, limited liability companies, sole proprietorships down to household businesses. Table 2.5 shows the shares of industrial production, by type of production entity. While the share of state-owned enterprises has not increased significantly, the share of the non-state-owned enterprises has fallen considerably. This reduction stemmed from the substantial contraction of the cooperatives,

not from any fall in the share of the private enterprises and the family firms, which actually expanded by approximately 200 per cent and 25 per cent respectively.

By 1993, there were already 984212 private business entities in operation. These entities were usually very small in terms of capital. On average, a private business had 98 million dong worth of investment and 526 million dong of capital compared to the corresponding figures of 7021 and 8652 million dong for a government enterprise. On average, the total assets of a government enterprise were 23.4 times of the total assets of a private business (Vu Tuan Anh 1994: 30).

The policies encouraging an independent role for households have also positively affected the production activities of the household sector, a component of the private sector. The number of newly established household businesses increased significantly along with the increasing number of private businesses. According to a survey conducted by the Ministry of Labour, Invalids and Social Welfare in 1991, of 1008 business units in five provinces, up to 80 per cent of them were private and household businesses[3] and were newly established after 1987 (Vu Tuan Anh 1994: 33). The share of the total value of goods and services provided by the household sector in services increased from 41.4 per cent in 1986 to 66.9 per cent in 1990 (GSO 1996).

Besides the change of ownership of land use rights and factors of production, which tie the interests of households more closely to the final products of their land, there were other

[3]The difference between these two forms is hired labour: while private business units have to hire labour for their operation, the household ones use only the labour of the members of the households. According to Vu Tuan Anh (1994: 33), in 1991, the average size of a private business was 13.7 labourers with 11.4 hired labourers, while the average size of a household business was only 4.8 labourers – household members.

reasons for the household sector to expand. These reasons rest in the characteristics of the household.

Unlike other economic units, economic household units are established along family lines. Thus all members of a household business are likely to be closely involved in the family business and to have a conscientious attitude towards the common work and family welfare. The problem with labour discipline that used to be a primary concern of the old-style cooperatives is no longer present. Children and old people, especially in families involved with agricultural production, are often found to be very useful in doing simple and relatively undemanding jobs, for example, in cattle husbandry and vegetable planting. Production skills and experience are learned and transferred from generation to generation in these small business units. Not surprisingly, in the cooperative regime pre-1980, productivity in the "five per cent land", which households could use as they wished, was often twice and sometime three times the productivity of the land in the cooperatives (Tran Hoang Kim 1996).

Another reason for the proliferation of the household economy stems from the small size of household units. A small size business usually does not require much startup capital and can be very flexible. Despite their limited capability for applying new technology, often leading to low productivity, small-scale units are capable of changing the type, the pattern and the quantity of products very quickly in accordance with the changes in demand and price in the local market. They also can be highly flexible in making decisions regarding finance, production and consumption. If their products are not sold in the market, household units can easily change direction and produce other products (plants) or just

confine themselves to production for their own uses. This form of business, therefore, is very suitable even for groups of poor households in developing countries.

Traditional professions, such as traditional medicine, handicraft, pottery etc. have been associated quite closely with family businesses and villages. For example, in a village of this type in Thai Binh province, up to 700 of the total of 800 households of the village follow traditional professions (weaving) and the remaining inhabitants are involved in agricultural production (Hoang Kim Giao 1993: 44). These professions require quite complicated skills and know-how which are taught and passed down from generation to generation only in families. For such professions, cooperatives inhibited the transfer of "know-how" and skills from generation to generation.

Table 2.6: Growth of foodstuff production in different periods

	1976-80	*1981-85*	*1986-90*	*1991-95*
Total paddy equivalent food output in the whole period (million tones)	66.74	84.82	98.53	125.40
Average annual output (million tonnes)	13.35	16.96	19.71	25.08
Average annual growth rate (per cent)	1.70	4.78	3.38	5.06

Source: Tran Hoang Kim (1996: 223)

The above developments in the household sector contributed substantially to the increasing production of rice and the rice exports of the country. From 1991 to 1995, the average annual growth rate of gross agricultural output value was 5.4 per cent which was high relative to agricultural growth rates for previous years. Table 2.6 gives us a close look at the achievements in the foodstuff industry. The increasing trend of foodstuff production is very clear and reaches the highest level in the period 1991-95. It is worth noting that during the period 1991-95 Vietnam suffered a series of unfavourable natural disasters including floods and insect plagues that resulted in the loss of 3 million tonnes of paddy, averaging 750,000 tonnes per year. This proves that sustainable growth of food production is attributed to something other than favourable weather conditions. With the high growth of rice production throughout the 1990s, Vietnam has already become the second largest exporter of rice in the world. Undoubtedly, the household sector has played an important role in contributing to these figures.

The radical changes that began in 1986 have influenced the life of households a great deal. As households began to make their own economic decisions, their production increased considerably. While there were only about one million households with an income level above 5 million dong in 1991, the number of households with an income above 10 million dong had increased to 3 million in 1995 and the number with income more than 15 million dong had increased to 6 million in 1997 (Nhan Dan Newspaper 23 May, 1999). The average income of households in 1993 was 2.1 times that of 1991 and 3.3 times that of the level of 1991 (Hoang Thi Thanh 1995); the monthly average income of 1995 reached a level twice that of 1993 (Tran Hoang Kim 1996). This increasing income, in turn, led to

higher saving of households as well as of the nation. The following section will look at the changes in both national saving and household saving over the period 1986-95.

2.3 National saving and household saving

Domestic saving of a country consists of three components: government saving, corporate saving and household saving. Due to lack of statistical data, this subsection will look only at two saving components, government saving and household saving.

2.3.1 Government saving

The macroeconomic policies under the renovation package of the late 1980s achieved their initial objectives: the economy was stabilised; the role of the government changed gradually from centrally administered control to indirect regulations; managerial and financial autonomy was introduced for the state-owned enterprises; and direct subsidies were abolished. These changes led to a decreased burden on the government budget. Financial measures restraining inflation and the government deficit, such as the policy of money tightening, the introduction of government bonds, and the enforcement of the tax system have also been considered to be successful.

Table 2.7: National budget (per cent of GDP)

	1986	*1987*	*1988*	*1989*	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*
Revenues	**14.0**	**13.2**	**11.3**	**13.9**	**14.7**	**13.5**	**19.0**	**22.5**	**24.3**	**23.9**
+Taxes	3.1	2.4	2.9	3.9	4.0	10.5	13.2	17.7	19.4	20.3
-Private enterprises[a]	2.1	1.8	2.1	2.6	2.3	2.2	3.0	3.5	3.3	4.5
-State-owned enterprises	-	-	-	-	-	6.9	8.2	9.3	9.1	8.5
-Foreign Trade	1.0	0.6	0.8	1.3	1.7	1.4	2.0	4.3	5.9	6.6
+Transfers from state-owned enterprises[b]	10.1	9.9	7.2	8.0	8.6	1.2	2.6	1.9	2.0	0.7
+ Other	0.8	0.9	1.2	2.0	2.0	1.4	2.5	2.9	3.0	2.9
Expenditure	**20.2**	**18.0**	**18.5**	**21.4**	**20.5**	**15.0**	**20.7**	**27.1**	**25.9**	**24.4**
+ Consumption	13.7	13.7	13.9	15.4	14.7	11.4	14.0	18.8	17.6	17.3
+ Investment	6.3	4.2	4.4	5.8	5.1	2.8	5.8	7.0	6.6	5.7
+ Interest	0.2	0.1	0.2	0.2	0.7	0.8	0.9	1.3	1.7	1.3
Deficit	**-6.2**	**-4.8**	**-7.2**	**-7.5**	**-5.8**	**-1.5**	**-1.7**	**-4.6**	**-1.6**	**-0.5**

Note: [a]/ including agriculture
[b]/ until 1990: profit transfers and depreciation, from 1991: capital utilisation fee and depreciation
Sources: IMF (1994) and World Bank (1995a)

As a result, there was a significant reduction in the budget deficit. The improvement of the national budget during the period 1986 – 95 can be seen in Table 2.7. While the share of the tax revenue from the state sector is the largest, it seems to fluctuate considerably. In contrast, the share of tax revenue from the non-state sector increased steadily from 1.8 per cent in 1987 to 4.5 per cent in 1995. Before 1991, the deficits were quite high, but after 1991, the deficit of the national budget (the residual after subtracting expenditure from revenue) fell quite significantly to 0.5 per cent of GDP in 1995.

One of the driving forces behind the improvement is the growth of government saving which is defined as the government revenue remaining after expenditure and interest rates have been subtracted. The period after the renovation has seen a substantial change in the financial situation of the government.

Despite the big cut in aid flows from the former Soviet Union and the former socialist countries at the end of the 1980s and the beginning of the 1990s, government saving has increased considerably. According to a report of the Ministry of Finance - "National financial policies for the strategy of socio-economic development 1996-2000", government saving turned from being negative to positive. It was 1.094 billion dong or 1.4 per cent of GDP in 1991, and it increased to 10.650 billion dong or around 5.1 per cent of GDP in 1995. The year 1991 was considered as the turning point for government saving after a long period of being negative. For the whole period 1991-95, the average saving of the government was 22.010 billion dong or 3.1 per cent of GDP.

In fact, government saving needs to increase further. Its potential relies upon a further improvement of the tax system. In spite of some recent changes, the current tax system, according to the Ministry of Planning and Investment, has suffered a loss of about 30 per cent of total tax revenue (Ministry of Planning and Investment 1996). The major reasons include the inefficiency and weakness of the tax-collecting organisations and the incompleteness of the tax system. A tax system reform could improve the flow of tax revenue and, consequently, could improve the potential for government saving.

2.3.2 Household saving

Saving of households is often very difficult to assess due to lack of statistical data and reliable surveys. However, to an extent, we could possibly gain some insight into household saving by looking at the financial saving of households in the financial institutions or, in particular, saving deposits in the banking system. This is because financial saving is one of the important sources of saving of households. For example, Table 2.8 shows the money deposits of enterprises and households in the four state commercial banks[4] during the first half of the 1990s.

The saving deposits of the private and the household sector have been growing quickly from 2,799 billion dong in 1991 to 11,523 billion dong in 1996. While in 1991, the deposits of households were much smaller than those of the state-owned enterprises, they

[4] The four state-owned commercial banks are the Bank for Investment and Development of Vietnam (BIDV), the Bank for Foreign Trade of Vietnam (Vietcombank), the Industrial and Commercial Bank of Vietnam (Incombank) and the Vietnam Bank for Agriculture and Rural Development (Agribank).

became much larger than those of state-owned entities in 1996. The share of private saving in total saving deposits also became the largest among all sectors in the period 1994-96.

Table 2.8: Money deposits in four state commercial banks (billion dong)

	1991	*92*	*93*	*94*	*95*	*96[a]*
State-owned entities	6,840	7,922	4,633	5,159	7,286	8,604
Private entities	73	132	-	-	-	-
Households	2,799	3,838	3,930	5,546	8,867	11,523
Other	2,861	2,564	5,787	6,417	7,636	9,059
Total	12,573	14,456	14,350	17,123	23,789	29,186

Note: [a]/is expected value
Source: Ministry of Planning and Investment (1996)

Apart from deposits in the banking system, households also save by buying government bonds and credit notes. Table 2.9 shows the development of this kind of saving by entities and the household sector in the financial balance of four state commercial banks.

As can be seen in Table 2.9, the two major parties involved in buying government bonds and credit notes have been state-owned enterprises (SOEs) and households. However, the amount of money the SOEs used for buying bonds and the like fell substantially from 68 per cent of the total in 1991 to 13.3 per cent in 1996. In contrast, the amount of money that households used to buy bonds and credit notes increased sharply from 32 per cent in 1991 to around 86.7 per cent in 1996. In addition, according to an estimation of the Ministry of Finance, in the period 1991-95, total household saving for investment was about 10 per

cent of GDP (Le Quoc Ly 1995). Compared to 14.2 per cent of GDP for domestic saving in the period 1991-95 (calculated from Table 2.11 in the next subsection), this figure shows that household saving has played an important role in domestic saving.

Table 2.9: Balance of bonds and credit notes in four state commercial banks (billion dong)

	1991	*92*	*93*	*94*	*95*	*96*[a]
State-own entities:	5,350	5,230	770	1,266	1,648	1,964
-in percentage of the total :	68	60	14.2	15.1	13.4	13.3
Private entities	3	5	-	-	-	-
Households:	2,514	3,512	4,643	7,079	10,647	12,831
-in percentage of the total:	32	40	85.8	84.9	86.6	86.7
Total	7,867	8,771	5,413	8,336	12,295	14,795

Note: [a]/is expected value
Source: Ministry of Planning and Investment (1996)

It is worth noting that the data of the Vietnam Living Standards Survey, which was conducted in 1993, revealed that the financial saving of households is not the largest part of household saving. As shown in Table 2.10, the most popular forms of household saving are holdings of gold and American dollars and cash.

Table 2.10: Forms of household saving

Forms of saving	*Average saving of a household (thousand dong)*	*Percentage of total saving*
Saving book of State bank	131.2	7.4
Saving book of other banks	6.1	0.3
Saving book of credit cooperatives	3.5	0.2
Bonds	6.3	0.4
Stocks, shares, contribution to business	71.6	4.0
Cash	179.1	10.0
Dollars	65.7	3.7
Gold	784.3	44.0
Buildings, houses	358.3	20.1
Durable assets	38.1	2.1
Paddy, rice	54.1	3.0
Other	83.7	4.7
Total	1782	100

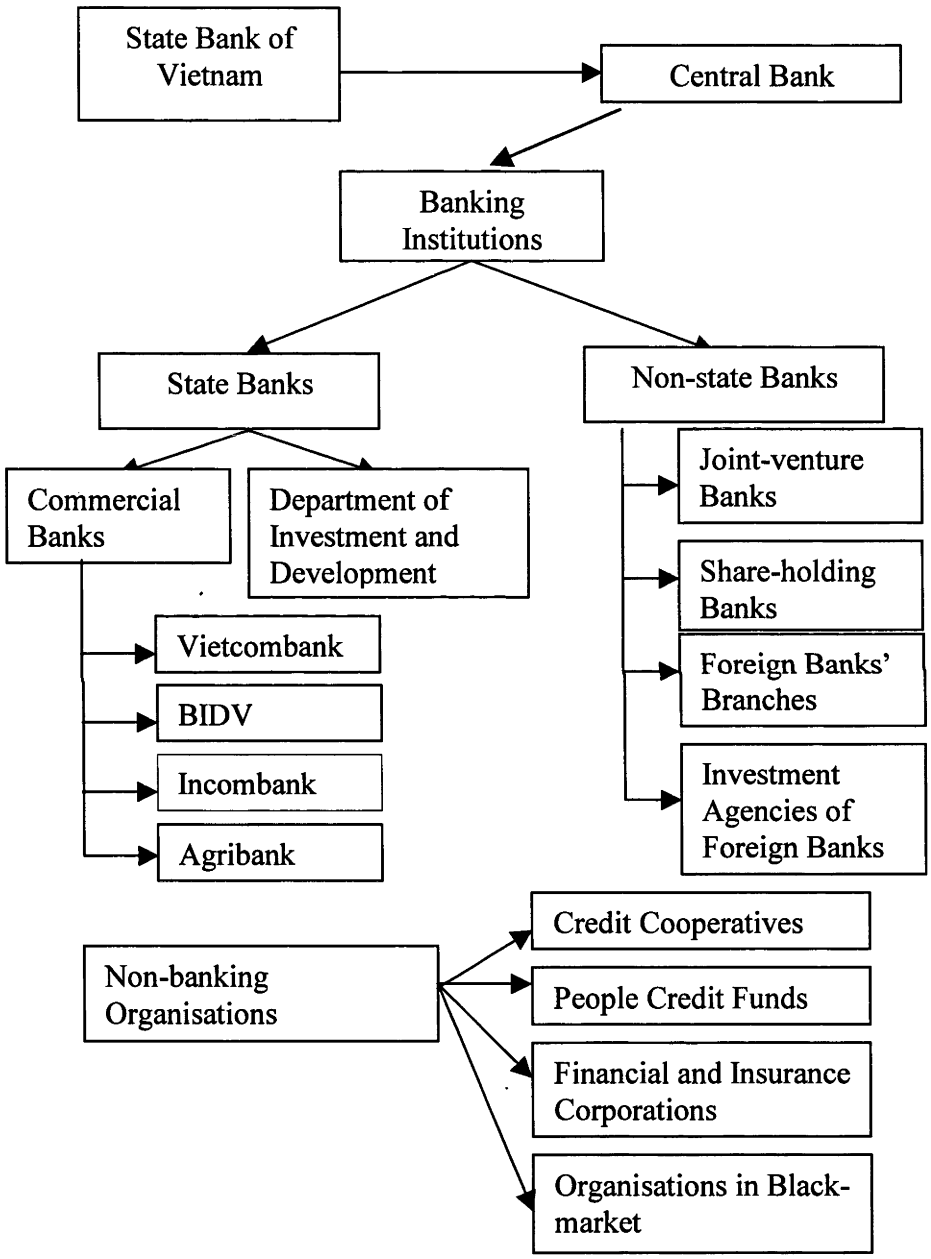
Source: Data of the Vietnam Living Standard Survey 1992-93.

This pattern of household saving may be explained by the instability of prices and hyper-inflation that occurred during the period of the late 1980s. The shock of loss of value of money deposited in banks and in the system of credit cooperatives as a result of high inflation and the collapse of the system of credit cooperatives in the second half of the 1980s may have had a considerable influence on the lack of trust placed by households in the financial institutions.

Keeping money in gold, dollars and in housing is seen as a safe way for people to hedge against unpredicted risks. This fact suggests two important points. First, there is a large amount of money that has not been mobilised to fund the increasing demand for productive investment. Second, the system of financial institutions is undeveloped and has not operated efficiently enough to utilise the potentially large sources of finance from the population. In addition, households tend to save in forms which do not contribute significantly to the pool of funds for productive investment. Table 2.10 also reveals that saving in forms that could be used for productive investment contributes only 12.3 per cent while other forms of saving contribute 87.7 per cent. Therefore, it is important for financial institutions to gain the trust of people and to have appropriate measures to attract inactive funds for the purpose of raising needed capital.

After the renovation began, a series of laws relating to the financial system were passed in the early 1990s. These included the Law on the State Bank, the Law on Commercial Banks and Credit Cooperatives and the Decree on Foreign Banks. Development of the financial sector started to gain momentum. Up to 1994, there were four state banks, 53 private or joint venture banks and a growing number of foreign banks and branches that provided the financial services and the loans for business (Development Strategic Institute 1996). In contrast, in the period before 1988, there was only the State Bank and two special banks also of the state: the Foreign Trade Bank (Vietcombank) and the Bank for Investment and Development of Vietnam (BIDV). These numbers indicate a move towards significant changes in financial institutions.

Figure 2.1: Structure of the financial system in Vietnam



The structure of the system for mobilising capital for investment is represented graphically in Figure 2.1. Among the banks of the system, four state commercial banks have been playing leading roles in mobilising capital, holding 86 per cent of total capital mobilised. The newly developed joint-venture banks have been very dynamic with a total number of about 70 banking organisations or branches. This includes 33 share-holding banks in the urban areas and 16 share-holding banks in the rural areas. The credit cooperatives and the people's credit funds consist of some hundred units that provide helpful services to attract money as well as providing credit for the population. According to an estimation of the Ministry of Planning and Investment, on average, 20 thousand people use the services of a bank. However, only the state commercial banks have a banking network for the whole country with about 1200 branches. This system is still far from providing sufficient financial services for the rural areas.

The underdevelopment of the financial system also manifests itself in the total asset holdings by the commercial banks and the significant amount of cash trading in the market. An estimation of the Development Strategic Institute in 1996 showed that the total credit assets of the commercial banking system consist of only 29 per cent of GDP which is much lower than that of other countries in the Asian region (Development Strategic Institute 1996). The insurance-credit banks contribute only 2 per cent of GDP. Cash is still a major means of payment. For example, the World Bank (1994) has pointed out that Vietnam is still a cash economy, with cash accounting for about 50 per cent of the M2 money supply. This figure is much higher than the average level of 10 per cent in the ASEAN countries and an average of 20 per cent in most transitional economies (World Bank 1994). The ratio M2/GDP - the financial deepening indicator - is 23-30 per cent compared to 75 per cent in

Thailand, 95 per cent in China, 110 per cent in Singapore and 115 per cent in South Korea. Compared to M2, saving is very low and foreign currency constitutes 23.3 per cent, a rather high level compared to 0.5 per cent in South Korea (Development Strategic Institute 1996). The stock market is not likely to be developed until at least 2000. An estimation of the World Bank (World Bank 1994) has revealed that less than 10 per cent of the population has had any contact with banks and the banks do not have enough branches in the rural areas.

The above statistical figures show that although diversification and growing competition among the banks have led to a significant improvement in the efficiency of the financial system, the financial institutions are still far from meeting the demand from business entities and households and undertaking the mobilisation of saving capital. With the large amount of financial capital in the population, household saving may play a crucial role in fulfilling the goal of increasing domestic saving to 30-35 per cent of GDP. Therefore, appropriate policies associated with the household sector and the significant improvement of the financial system are very important if a high proportion of domestic saving is to be realised.

2.3.3 National domestic saving

Due to the improvements in saving in the government and household sectors, the national domestic saving ratio increased during the first half of the 1990s. Table 2.11 shows this trend of the aggregate saving and investment ratios of Vietnam from 1989 to 1996. For a short period, aggregate saving increased sharply from around 2 per cent in 1989 to 17.1 per

cent in 1995. Domestic saving began to play an important role in providing capital for investment in 1990, when the aid flows from the CMEA countries were cut. Even though foreign direct investment started to flow strongly into Vietnam after the Law of Investment came into effect in 1987, since the early 1990s, domestic saving has made a significant contribution to total investment (Table 2.11 and Figure 2.2). A point of interest is that, domestic saving includes all sources of payments and saving from overseas Vietnamese and these savings are often under the names of their relatives living in Vietnam.

Table 2.11: Aggregate saving and investment ratio (per cent of GDP)

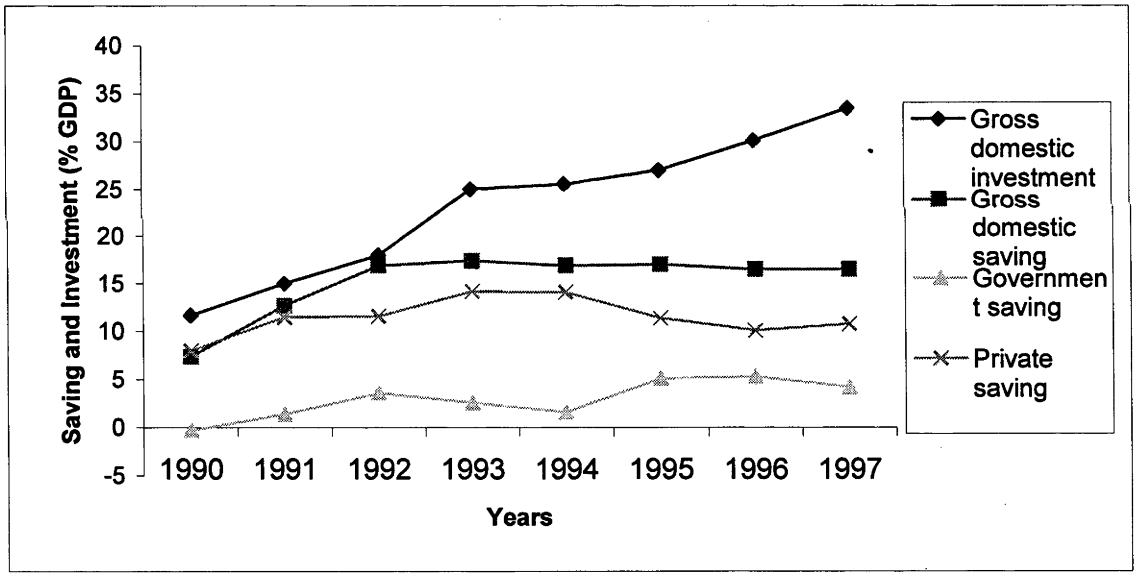
	1989	*1990*	*1991*	*1992*	*1993*	*1994*	*1995*	*1996*
Investment ratio	10.0	11.7	15.1	17.0	24.9	25.5	27.1	29.5
Saving ratio (Domestic saving)	2.0	7.4	13.1	16.3	17.4	16.9	17.1	17.7
Current account deficit (foreign saving)	-8.0	-4.3	-2.0	-0.7	-7.5	-8.6	-10.0	-11.9
Growth rate	..	5.1	6.0	8.6	8.1	8.8	9.5	9.3

Note: Data of 1989 and 1996 are estimates
Source: GSO (1995), World Bank (1995)

The early 1990s experienced a sharp increase in investment from abroad because of relatively liberalised laws governing foreign direct investment. However, such investment

does not yet represent a major share of the total investment in Vietnam. The annual share of foreign investment in total national investment in 1991-95 was 22 per cent, and in 1997 it was 33 per cent (Thanh Hung 1998). In addition, the trend of foreign investment began to decline in the second half of the 1990s. This was a consequence of the financial difficulties experienced in the Asian economies that have been the leading investors in Vietnam, and a number of obstacles arising from the complicated and lengthy procedures for licensing and permission approvals.

Figure 2.2: Saving and investment ratios in Vietnam in the period 1991-97



Note: Data for 1997 are estimates.
Source: Ministry of Planning and Investment (1996)

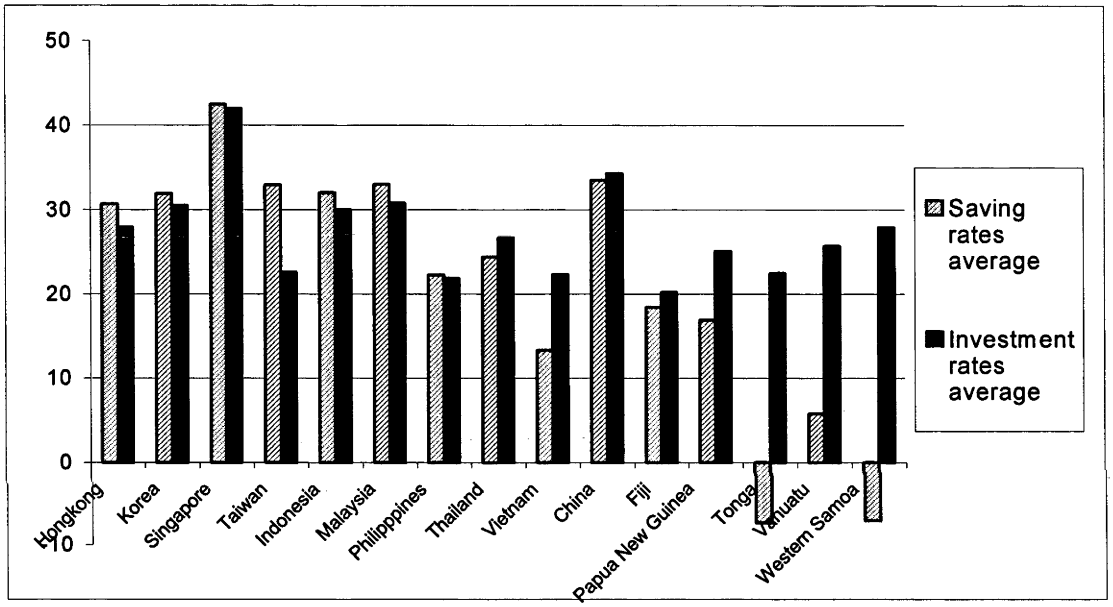
A weakness of foreign investment is that it is observed to be concentrated in the businesses that can return quick profits such as hotels, garments and textiles and assembling

manufactures while the number of foreign investment projects in the remote areas, in agriculture and infrastructure are very small. Up to 1998, there were only 233 projects with US 1665 million in agriculture that constituted 10 per cent of the total number of projects and 3.8 per cent of total investment (Thanh Hung 1998). The fishery industry had only 83 projects with investment of US 331 million. This situation suggests that despite the overall increase in foreign investment, such investment is still severely inhibited by a shortage of sound investment opportunities. In the absence of sufficient foreign investment, domestic investment, as determined by domestic saving and borrowing, is clearly of central importance in the short term.

As Table 2.11 and Figure 2.2 show, the domestic saving and investment rates have increased rapidly. However, in the period 1990-95, the saving rate for Vietnam was found to be slightly less than the average saving rate of developing countries (Masson *et al.* 1995). In addition, comparing Vietnam's saving rate with the domestic saving rate of the Asian countries alone, Vietnam's saving performance is still far from impressive. Figure 2.3 gives a comparison of the gross domestic saving rates and investment rates of Vietnam with some Asian economies of the Asia-Pacific region. This figure reveals that, except for the Pacific island countries which have low saving rates because they are dependent on external inflows of official assistance and private transfers, all other countries have higher national saving rates than Vietnam. The lowest number of 22.3 per cent for the Philippines is still considerably higher than that of Vietnam. The People's Republic of China, a country that is also in a transitional stage, has a saving rate of around 35 per cent for GDP, considerably higher than Vietnam's figure. The domestic saving rate of Vietnam is much

lower than the saving rate of the more developed countries in the region such as Singapore, Taiwan, Korea, and Malaysia.

Figure 2.3: Gross domestic saving rates and investment rates in the Asia-Pacific region (period 1981-90)



Note: Data of period 1990-95 for Vietnam
Source: Asian Development Bank (1992)

If it is true that domestic saving rate is one of the necessary (though not sufficient) conditions for sustaining a high growth rate (as in the case of the NIEs) and if Vietnam wants to repeat the achievements of the successful countries in the region, then the above comparison suggests that it needs to have a significant improvement in its domestic saving rate.

2.3 Concluding remarks

After more than ten years of implementing economic reform, the economy of Vietnam has achieved some encouraging results. However, the country can not hope to enjoy continuing high economic growth for long if the reform program is not maintained. The success of the early stages of reform worked primarily through a move towards a system of private property rights and the removal of restrictions on the operation of goods markets. However, the financial sector, which is essential to the channelling of saving for capital formation purposes remains highly distorted. Yet, if high and stable economic growth is to continue in the future, substantial investment will be needed requiring a commensurate increase in saving, in particular domestic saving. In accordance with this demand, domestic saving must be increased. The recent comparison of the saving rate of Vietnam with other countries shows that Vietnam's domestic saving performance is still poor and needs to be improved significantly. Being an important part of domestic saving, household saving also needs to be a focus of attention so that it can contribute significantly to increasing the nation's overall domestic saving and capital formation. Therefore, it is important to investigate the factors that influence household saving and the ways households do save. The following chapters of this study will attempt to elucidate these issues.

Appendix 2.1

Major features of policy regimes

	Until 1981	*1981-88*	*After 1988*
Type of system	Work-based contract system	Product-base contract system	Household responsibility contract system
Agricultural production	Collectivised	Partly decollectivised	Fully decollectivised
Land	Controlled by cooperative; access to land restricted	Allotted to individual farm households; insecure tenure	Long-term leases to individual farm households[a]
Farm decisions	Made by planning department; centralised	Made by planning authorities without account of market forces	Made by individual farm households
Farm operations	Carried out by cooperative	Carried out jointly by cooperative and households	Carried out by individual farm households
Farm income	Based on hours of work in cooperative	Based on hours of work and output above quota	Based on total output after paying land tax and contributions to local funds
Inputs and outputs	Controlled by government; low output price; poorly timed supply of inputs	Partly controlled by government: fully controlled input supply; partly controlled output market	Fully liberalised
Impact	No incentive	Some incentive	Full incentive
Growth rate of rice output	0.46 per cent	3.14 per cent	5.02 per cent (1988-92)
Level of rice self-sufficiency	Food shortages; rice imported	Food shortage in 1987-88	Self-sufficient; rice exported

Note: [a] Tenure was further secured by recognition of the right to transfer, exchange, lease, inherit and mortgage land under the Land Law of July 1993.

Source: Nguyen Tri Khiem (1996)

Chapter 3

Literature survey

The consumption and saving of individuals and households have long been interesting issues for economists. The questions of how individuals and households save throughout life and what factors make them save have been well explored at both a theoretical and an empirical level. However, there remain many unanswered questions, particularly in relation to the saving behaviour of developing countries such as Vietnam. As the purpose of the following chapters of this thesis is to develop a model of saving behaviour as the basis for an empirical analysis of saving in Vietnam, it is important to commence by reviewing the extensive literature on consumption and saving. This is the task of this chapter which will review the relevant parts of the literature on the theory of saving as well as surveying empirical studies of saving in developing countries.

3.1 The literature on the theory of saving

From a theoretical perspective, there are two main influential theories of consumption and saving: the Friedman Permanent Income Hypothesis (PIH) (Friedman 1957), and the Life Cycle Income Hypothesis (LCH) (Modigliani and Brumberg 1954; Ando and Modigliani, 1963)[5]. Essentially, these two models were the development of the Keynesian Absolute Income Hypothesis (AIH) which expresses a very simple relationship between current

[5] Other theories include Duesenberry's Relative Income Hypothesis and Barro's Intergenerational altruism.

disposable income (Y) and current consumption (C). However, the Keynesian model does not come from the microeconomic theory of consumer choice while the other two models do. Both the PIH and the LCH begin with the explicit assumption that consumers' behaviour is the result of solving the problem of maximising utility by allocating a lifetime stream of earnings to an optimum lifetime pattern of consumption. The Keynesian AIH model is also incomplete in the sense that it does not capture the relationship between wealth and consumption. The argument of the AIH is that current consumption depends only on current income. While consistent with the Keynesian model, both the PIH and the LCH models extend the focus to more than current income. The PIH/LCH arguments are that consumption depends not only on current income but also on the stream of income over the lifetime of individuals. Individuals in these models want to have relatively smooth consumption patterns and hence generate relatively flat consumption demand over the life-cycle.

The general formulation of the consumption function of individuals that characterises the common feature of both these models is $C_t = f(PVt)$, with $f'(.) > 0$, which means that the consumption of the individual at time t is an increasing function of the present value of his/her income stream at time t. Both models use the assumption of homothetic intertemporal preferences; that is, an increase of a certain percentage in lifetime wealth will lead to the same percentage increase in expenditure in each period. This implies consumption in any period is proportional to lifetime wealth. From this common point of departure, the PIH and the LCH differ from each other in the way they treat the present value of the income stream or life resources.

With the assumption of an infinite life horizon of an individual, Friedman PIH decomposes income (Y) of the individual into two components: permanent income (Y_p) which the individual imputes to himself/herself, and transitory income (Y_t) which reflects other "accidental" or "chance" income: $Y = Y_p + Y_t$. Transitory income is basically a deviation from permanent income, and can be positive, negative or zero. With the assumption that consumption is a fraction of the present value of the income stream which is determined mainly by permanent income Y_p, saving (S) is also determined by the permanent income Y_p, and in addition, largely reflects transitory income Y_t. In the PIH, the relationship between saving and assets is not explicitly expressed.

The LCH, differing from the PIH in the assumption that an individual has a finite life, through young, middle and retirement ages, permits analysis of the saving pattern of an individual over his/her life. The basic idea of the LCH is that the individual saves during periods of relatively high earning (the middle of life) to finance consumption during periods of relatively low earning (beginning and end of life). That means, people save until retirement, then dissave and, in the case of no bequests, the present value of saving will match that of dissaving over the whole life of the individual. The LCH can show the systematic variations in income and saving due to maturity, retirement and change in the family size of an individual throughout life. The LCH is also able to take bequests into account, where it is impossible to do so with the PIH.

In the last decades, these two intertemporal allocation theories have become a centerpiece of the theory of consumption and saving of individuals and households. They have provided a standard framework for analysing the relationship between intertemporal

consumption and intertemporal income allocation. In the literature, the models (and their various versions) using this framework are sometimes referred to as standard models (PIH/LCH framework). The general assumptions that are used in the standard models are as follows: agents have intertemporally additive (or strongly intertemporally separable) utility functions with a constant discount factor; there is no bequest motive; the utility function has a quadratic form, agents face a perfect capital market; and there is no uncertainty. The broad implications of these models are that the shape of the path of consumption over the life of an individual is independent of the shape of the expected path of income; the marginal utility of expenditure is constant from one period to the next; and elderly people should dissave relatively more, and hence run down assets.

By relaxing the different assumptions of the standard models, subsequent studies have made a significant contribution to the development of the theory of consumption and saving of individuals and households. Recent contributions to the theory include considering problems of liquidity constraints (imperfect capital markets): Hall and Mishkin (1982), Zeldes (1989a), Deaton (1991); precautionary saving motive and uncertainty: Hall (1978), Flavin (1981), Skinner (1988), Zeldes (1989b), Kimball (1990), Hubbard *et al.* (1994a) and (1995), Attanasio and Browning (1995); non-additive functional form of utility: Browning (1991), Deaton (1992); bequests: Kotlikoff and Spivak (1981), Bernheim *et al.* (1985), Altonji *et al.* (1992). Although this literature is very large, a number of problems remain unresolved and require more theoretical and empirical research.

There is another strand of the theory of consumption, which regards goods, services and time as inputs in the household production process that generates the utility outputs of

households. In this approach, goods and services may not be direct sources of utility. Lancaster (1966) argued that the source of welfare is not the goods as such, but rather their properties or characteristics. The household chooses a bundle of goods that maximises its utility from the desired characteristics. Becker (1965) argues that the source of utility is not the market goods but the activities or "basic commodities" into which goods are transformed. In other words, household utility depends on home production goods that have market goods as inputs. Mincer (1962) and Becker (1965) view time as another input to home production. The household, therefore, faces two constraints to maximise its welfare: the budget constraint and the time constraint. Admitting the role of time as an important input of home production and an argument in the household utility function, the theory of home production has had a major impact on subsequent research.

Another strand of the literature employs a behavioural framework. In such an approach it is believed that the standard PIH/LCH framework for studying consumption and saving is too restrictive. It argues that there is a need for a better way of understanding saving which looks at the behaviour of individuals, taking into account social and psychological factors as well as economic factors. Problems such as self-control, "rules of thumb" and "mental accounts" for different assets may be found in this branch of the literature, for example Thaler (1990; 1994). This approach is sometimes referred to as the only coherent alternative to the standard model of the PIH/LCH framework, because it puts saving at the centre of consideration, while the standard models reduce saving to a residual between income and consumption.

The modern forms of the PIH/LCH standard models and other approaches have made substantial progress in helping us to understand the consumption and saving behaviour of individuals and households. These theories generate various predictions that can be tested econometrically using various household data sets. Although there is a large body of literature on empirical studies of household saving, this review will look only at empirical studies in developing countries. For a review of the literature on household saving in developed countries see for example, Hayashi (1987 and 1996), Hurd (1990), and especially Deaton (1992) and Browning and Lusardi (1996).

3.2 Empirical studies on saving in developing countries

A prominent feature of the literature is that much of the empirical work on saving is descriptive and relatively atheoretical, especially for developing countries. Most studies in developing countries adopt consumption and saving theories without a modification in accordance with the typical conditions of these countries. It is well known that the more advanced economies have more developed pension and insurance schemes as well as other social security programs. Therefore, the saving behaviour of individuals or households of these countries may be quite different from that of developing countries. The theoretical models may also be very different when applied to the different countries. It is observed that the theoretical models are a closer fit to the data for industrial countries than that for developing countries.

Another prominent feature is that the empirical literature on household saving in developing countries is not as extensive as for industrial countries. One of the important

reasons for this is the lack of data. While the inadequacy of the household data on saving is still problematic in industrial countries, it is much more serious for developing countries because of these countries' limited resources for conducting surveys and creating panel data.

For testing the predictions of a consumption theory of households, it is ideal to have long time-series data that track individual households. This kind of data set is rare, even for industrial countries, let alone developing countries. For the latter, cross-section data are often used in studies of consumption and saving of households. In addition, survey data often show poor households spending more than they earn. According to Deaton (1992), in many developing countries, household surveys tend to show the population that comprise the bottom 50-80% of the income distribution apparently dissaving. The problem of systematic under-reporting of income, especially among the self-employed, can affect significantly the measurement of income and hence saving. The value of land and houses is also often difficult to measure, especially in the countries in transitional periods, where the housing market is not developed and land is not tradable. These measurement problems create many difficulties for empirical research.

Empirical studies of saving in developing countries can be divided into two groups: those that use microeconomic data on households, and those that use macroeconomic (aggregate) data. Although this study will deal with data at the household level, the literature on studies using aggregate data will be reviewed briefly in order to emphasise the importance of a set

of determinants of household saving, in particular, demographic factors[6].

One of the earlier studies that used microeconomic data on households in developing countries is that of Kelley and Williamson (1968). In addition to testing the life cycle theory, this study investigated the impact of income level and income per family member on household saving of a region in Indonesia. From an analysis of a sample of 490 urban and rural families, the study showed not only great variation in the marginal propensity to save over age groups but also that the marginal propensity to save rose as the household head became older, except for the age group 40-49. This confirms the predictions of the LCH model mentioned previously: old people dissave and run down assets. With limited data, it was impossible for the authors to estimate the impact of many socioeconomic factors, particularly education, which they believed may have an important effect on expected income and thus on present consumption.

The studies of the saving behaviour of households by Lily (1974) and Arbali (1988) are among the few such studies that consider South-East Asia. Lily identified which functional form of the alternative models fits the data for Thailand, in order to explain the relation between income and saving. In a study of household saving in Indonesia, Arbali tried to determine the effects of factors such as income, age of head of family, family size and education of husbands and wives on saving. His conclusion was that only limited support has been found for hypotheses related to age, family size and education of parents.

[6] It is not always the case that conclusions of studies using macro data are consistent with the ones of studies using micro data. For example, while attempting to reconcile estimates from macro econometric studies with estimates from estimates of micro econometric studies Weil (1994) concludes that there is a significant relationship between saving rates and demographic factors while estimates from micro studies show a contrast, namely that people do not significantly dissave as they get older.

However, Arbali did not consider the effect of the dependency ratio – the ratio of the number of old people and children to the total number of household members – on saving. As shown in later studies in both industrial and developing countries, the dependency ratio turns out to be a very important factor influencing household saving.

The significant change in saving rates at both national and private levels has been the subject of a number of studies on saving in Korea. Kim's (1974) study, analysing per capita saving by urban households during 1965-72, showed that the average and marginal propensities to save were inversely related to household size. But the limitation of his survey (45 observations) could reduce the validity of the results. In a recent LCH study of Korea (Hurd and Lee, 1995), it was found that the saving ratio by age follows the pattern predicted by the LCH; that means the saving ratio is low at young ages, rises to a maximum at middle age, and then falls, becoming negative after about age 65.

A number of authors of studies on saving in developing countries preferred using the Keynesian model and the PIH in the original version as a basic model to conduct empirical studies. For example, in the study of money demand and household saving in an economy of disequilibrium and structural change in China, Ma (1993), using time series data from two provinces, tried to use both the Keynesian model and the PIH, to estimate the marginal propensity to save (*mps*) of households in the case of macroeconomic disequilibrium. For the case of India, Bhalla (1979) used the permanent income saving function to estimate the *mps* out of transitory income and the *mps* out of permanent income. He found that the *mps* out of transitory incomes were 0.27 and 0.29 for all households and for poor households, respectively, larger than the corresponding the *mps* out of permanent income of 0.23 and

0.11. These results indicate that the conclusions of the studies for developing countries are far from the prediction of the PIH that the propensities to save out of transitory income should be close to 1. However, the results do support the prediction of the PIH that the *mps* out of transitory income should be greater than the *mps* out of permanent income. The same results are also found in Alderman (1996) using a panel data of households in rural Pakistan. Other studies on saving of rural areas in developing countries may include Krishna and Raychaudhri (1982) for the case of India. Using both microeconomic data and time series data for different periods, the study found relatively low levels of the *mps* for rural households, which are in a range of 0.12 to 0.36.

A number of studies of saving in developing countries take into account the demographic factors. The studies of Snyder (1971), Lluch *et al.* (1977), Kelley (1980) and Udry (1995) are among the examples. The study of Snyder is one of the very few studies related to household saving in Africa. Having a broader view of the determinants of saving in a study of households in Sierra Leone, Snyder included the dependency ratio in the set of variables to explain the consumption decision of households. The study found that income, wealth and household size had an important impact on consumption, while gender of household heads and the dependency ratio had little impact. In Lluch *et al.* (1977), a study of the pattern of demand and consumption for developing countries in Latin America, the role of socioeconomic factors - location, family size and the age of heads of family - in consumption and saving were examined for the case of Mexico. However, using the model of the extended linear expenditure system as an analytical framework and a sample of 1256 rural households and 4352 urban households, the primary concern of this study was to determine the responsiveness of demand and consumption with respect to prices. Kelley

(1980) analysed the saving behaviour of 400 Kenyan households during 1968-69 and concluded that there was no evidence that the number of children affects household saving. The study of Udry (1995) on responses of saving to income shocks in Nigeria supports the hypothesis that households in poor agricultural societies used asset stocks to stabilise consumption in the face of uncertain income, but it does not show a significant relationship between saving and household characteristics.

In contrast to the small number of microeconomic studies in developing countries, the number of studies with aggregate data is much greater. Left (1969) showed the first indication of a relationship between the age distribution and the saving rate in a study for 74 countries, including 47 developing countries. In this study, which generated a series of debates in the literature in the early 1970s, high dependency ratios (the proportion of the population under 15 and over 65 years of age) were found to decrease saving significantly. The lack of any theoretical specification for this study has very often been criticised. The study of Gupta (1975) for 40 less developed countries using a simultaneous equation framework and a definition of the dependency ratio as the proportion of the population less than 15 years of age also showed a negative relationship between saving and the dependency ratio.

The impact of the dependency ratio as well as the growth rate of GDP on the saving rate is shown in a number of studies in developing countries (Fry and Mason 1982; Fry 1984, 1991; Taylor 1995). Using time series data for seven Asian countries (Burma, India, Korea, Malaysia, Philippines, Singapore, and Taiwan), Fry and Mason (1982) developed an extended life-cycle model for empirical purposes and concluded that the results supported

this model. The study also concluded that the dependency ratio is negatively related to the saving rate. Giving importance to the role of demographic factors for Latin American countries, Taylor (1995) concluded that favorable demographic factors in Latin America (and in other developing countries) offer poorer countries the chance to use the potential of the demographic transition to propel a financial transition to domestically financed accumulation, and even to capital export. From a sample of eight Asian countries (Indonesia, Malaysia, Sri-Lanka, Thailand, India, Korea, Philippines, Singapore), Lahiri (1989) found that growth, demographic factors, interest rates and the terms of trade are major influences on the saving rates, with growth and demographic factors the two most important determinants.

The studies using aggregate cross-section data or pooled cross-section time series in developing countries (Schmidt – Hebbel *et al.* 1992; Masson *et al.* 1995; Heller and Symansky 1997) also draw the same conclusions about the negative relationship between saving and demographic factors. Schmidt-Hebbel *et al.* (1992) in particular, using both combined time-series and cross-country data from developing countries, tested household saving's response to income and growth, rates of return, monetary wealth, foreign saving, and demographic variables. The findings of this study were that income and wealth variables affect saving strongly and in ways consistent with the underlying theories. There was evidence of a significant relationship between saving of the household sector and the dependency ratio. However, the relationship between inflation, the interest rate and saving were not clear (see, for example, Giovannini 1983, for a review). The result of ambiguity of the effect of the interest rate on saving is also consistent with the conclusions of the

consumption theories, which predict that this effect should be inconclusive because the income effect and the substitution effect work in opposite directions.

Most authors of studies on saving in developing countries, which consider the effect of the dependency ratio, do not distinguish between the young and elderly dependent ratios. If they do in some studies, for example Modigliani and Sterling (1983); Feldstein (1980); Weil (1994); Horioka (1991) and Heller and Symansky (1997), the conclusion of whether the young dependency ratio has a more negative impact on the saving rate (aggregate and private) than the old dependency ratio or vice verse is unclear (see Table 5.5). In addition, except for the study of Schmidt – Hebbel *et al.* (1992), it is not clear whether the household saving is being affected by these two ratios in the same manner, as private saving may be quite different from household saving.

Although the bequest motive has long been taken into account in the literature (for example, Barro 1974) the studies that deal with the bequest motive in developing countries are very rare. The most difficult problem is probably data availability. One of the few studies on bequests in developing countries is Deolalikar and Singh (1990) for the case of India. Using retrospective data on bequest receipts and wealth over two generations of rural Indian households, the study found an adverse impact of bequest receipts on the wealth accumulation of recipients. The effect is much more negative for the current generation of household heads than for the previous generation implying that the effects associated with bequest receipts have increased substantially over a generation. This finding is quite interesting since, *a priori* the impact of bequests on final wealth outcomes is not clear. Bequests can have either a positive impact on the wealth of recipients by enhancing

recipient productivity at creating new wealth or a negative impact by reducing labour supply or by increasing consumption, thus reducing future wealth creation. However, the small number of studies on this issue makes it difficult to draw any firm conclusion about the effect of bequests on saving and wealth accumulation in developing countries in general. More data on bequests of households should be collected in developing countries in order to obtain more conclusive evidence.

In contrast, the bequest motive has gained significant attention in the literature on saving in industrial nations. This is because it may change the implications of many economic models and the effects of policy. Results of the studies using the LCH augmented by the bequest motive are interesting. White (1978) and Darby (1979), using a simulation approach for life-cycle earnings, consumption and saving with a particular utility function, have found that a substantial fraction of household wealth is inherited. Although large inheritances are not necessarily evidence for a bequest motive, at least they are consistent with the existence of it because the date of death is uncertain. Kotlikoff and Summers (1981), and Kotlikoff (1988) also suggest that a bequest motive may be important after finding that 80 per cent of household wealth was inherited and only a small fraction of existing wealth can be attributed to the accumulated difference between the income and consumption of people currently alive. Weil (1994) pointed out that the anticipation of future bequests might lower the saving of the young. That is, an increase in the size of bequests to children will affect their saving and hence the economy's level of capital. The studies using cross-section data on wealth holdings by age (for example Mirer (1979); Blinder *et al.*(1983); Menchik and David (1983)) show that wealth increases with age implying that the elderly save as they get older rather than dissave as predicted by the LCH.

As Kurz (1985) has pointed out, direct examination of the wealth-age profile may be the most decisive attack on the LCH of saving. Alessie *et al.* (1997) found that a sizeable fraction of households do not dissave when old, suggesting some empirical support for the bequest motive. This suggests an important role for the bequest motive for saving and points out the necessity of taking into account this factor in studies in developing countries especially Asian countries where the relationship between generations of households and the bequest motive are observed to be strong.

3.3 Concluding remarks

There is extensive literature on the saving behaviour of households although the analyses vary according to the question that each study has sought to address. However, some comments can be made from the review of the literature. First, there is a common observation that the results of the empirical studies in developing countries are likely to be less consistent with existing theory than those in developed countries. As noted above, existing theories are typically formulated to apply to developed countries. Such theories may perform well in these countries but poorly in developing countries. Second, many studies of saving in developing countries do not discuss in detail the theoretical framework in which the problem is considered. The saving model taken for conducting empirical studies may also play an important role in terms of broadening the spectrum of the issue under consideration. For example, using the Keynesian saving model tends to have more limitations than using the model of the LCH if one wants to take into account factors other than current income. The LCH model in turn is more limited than the augmented LCH model for research on the role of the saving factors that are still under debate. Third, the

quality of data and measurement problems can lead to quite different conclusions across countries. In addition, the poor quality and lack of data create considerable difficulties when research is concerned with such problems as liquidity constraints, precautionary motives and bequests. Finally, the empirical studies confirm the central role of income and wealth among the determinants of household saving. In most studies, some demographic factors are found to play an important role in influencing saving at both the national level and household level, although for developing countries, many of these factors have ambiguous effects on saving.

It is clear that considerable effort is needed for further research on the determinants of household saving in developing countries. This study attempts to contribute to the knowledge in this area by developing a modified life cycle model for households and conducting empirical analyses for household saving in Vietnam. These attempts will be presented in the next chapters.

Chapter 4

Theoretical framework and the model

This chapter presents a simple theoretical model to provide a more rigorous basis for empirical analyses. The theoretical model combines the ideas of the two-period life cycle consumption model of Modigliani and Brumberg (1954) and the model of home production of Becker (1965) and Gronau (1977) and incorporates bequests and a household structure applicable to Vietnam and other developing countries with Asian traditions. In this tradition, the extended family arrangement is observed to be rather prevalent, and the family is often run by a single decision-maker, the household head. A model with these features offers a way to analyse consumption and saving behaviour over the lifecycle of a household as well as the contributions of the dependent household members to the well being of the household. Becker's household production function emphasises that household commodities are nonmarket goods that are the outputs of production processes, the inputs of which are market goods and labour time of household members. In addition, each individual in Becker's household can use time either for household labour or market labour. Therefore, using Becker's approach is quite relevant to developing countries in that it allows for the contributions of children and the old people in households.

The basic life cycle model of Modigliani and Brumberg (1954) does not take into account bequests. However, it is possible to incorporate bequests and altruism as an option[7]. In line with Blinder *et al.* (1983), the model developed in this chapter allows bequests to enter the

[7] The literature on intergenerational transfers and altruism is quite enormous; see Becker and Toms (1979), Laitner (1979), Kimball (1987), Kotlikoff (1989) and others.

model through both the utility function and budget constraints. The structure of the chapter is as follows. Section 4.1 presents the model, section 4.2 presents some comparative static results, and section 4.3 provides conclusions.

4.1 The model

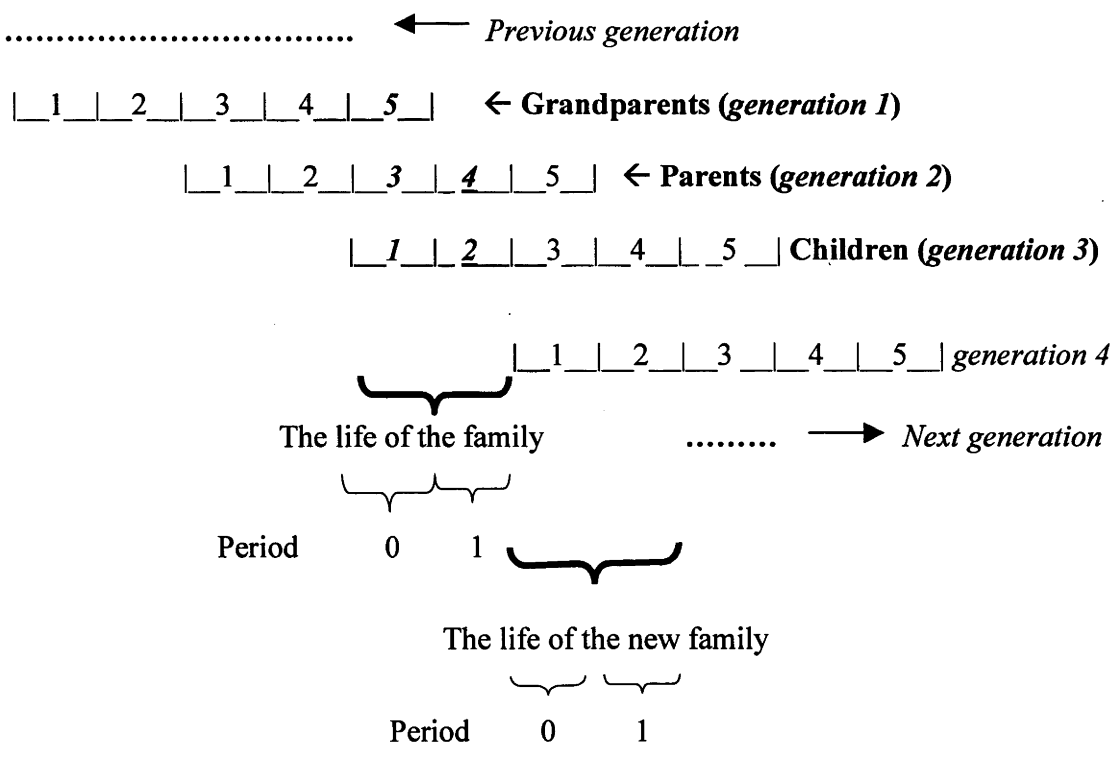
A prominent feature of households in developing countries, especially in Asian countries, is the multi-generation extension of households[8]. A household often has many generations living in it. In this study, it is assumed that there are three generations in a household[9]. An individual is assumed to have five stages of life: 1- dependent childhood, 2- independent childhood, 3- young husband/wife, 4- old husband/wife but still working and 5- dependent grandfather/grandmother. The individuals at the first and fifth stages, can be considered as "dependent" because, as is assumed, they will have no significant income from market activities, and so they are being looked after or cared for by the income earners in the household. However, they make some contribution to family production by doing housework. If they do not make a contribution to family production and earn income from market activities then they are at the second stage of life and are considered "independent".

[8] This study uses the words 'household' and 'family' interchangeably although in fact there are a number of definitions of 'household' and 'family' that distinguish these two concepts. In the literature, a variety of functions are usually associated with the household: co-residence; joint production; shared consumption and kinship links. These functions define different sets of individuals. But as Rogers (1990) pointed out, given the varied and complex nature of human society, generally, no definition of the household completely fits all circumstances. For example, co-residence itself may not be clear where many dwelling units form a single compound. Thus, the definition of the household should be given depending on the particular purpose of research. The household in this research is defined in terms of shared consumption, income and kinship links and, thus, is very close to the family although the household often refers more to economics while the family refers more to sociology and demography.

[9] The assumption is based on the fact that, according to a recent survey on living conditions of Vietnamese elderly people by the Ministry of Labour, War Invalids and Social Affairs, 92.25 per cent of elderly people live with their children, 6.9 per cent live alone and 0.85 per cent with friends.

Now, consider a model of a household that has grandparents, husband/wife and children. The household, as defined here, has two periods of life as illustrated in Figure 4.1. In the first period of the family, the parents are young and at the third stage of their life; the children are growing and at their first stage of life; the old dependent grandparents are at their fifth stage of life. If we use numbers from 1 to 5 to denote the five stages of life of an individual then the first period of life of the household is illustrated by the interval that contains stage 5 of the first generation, stage 3 of the second generation and stage 1 of the third generation. These stages are in bold italics in Figure 4.1.

Figure 4.1 Structure of an extended household with three generations



In the second period of life of the household, the parents are getting older but are still working and they are at the fourth stage of their life; the grandparents have died and the children have grown up and started earning income (adult children) and they are at the second stage of their life. So in the second period, the household contains only two generations: the parents and the (independent) children, and it is illustrated by stage 4 of the second generation and stage 2 of the third generation; both are in bold italics and underlined in Figure 4.1.

The life of a new family begins again when the children marry, have offspring and become parents; the old parents become dependent grandparents and thus the new family again has three generations in its first period[10]. To avoid the complication but with no less generality, it is assumed that individuals move from one stage to another at the same time as the other generations do. So in the second period of the household's life, the grandparents die at the same time as the children move into the second stage of their life.

To model the economics of this type of household other assumptions are made as follows: The utility function takes a separable form; there is substitution between market goods and home production goods; one generation makes some bequest for the next generation; the sum of all individuals' home production time is the only input in the home production function; the father participates solely in market work or at the "factory"; the mother works in both market and housework.

[10] According to Asian tradition, old parents often live with their oldest son. In the case that the parents have more than one child, the children other than the oldest son will leave the family when they grow up and create new families when they get married. In this new family, there are only two generations: the parents and the children. Therefore, the case we are considering here is a general case for both types of families. Empirical studies in a later chapter will cover both types of families.

The household maximises the utility function:

$$u = u(x_0) + \frac{u(x_1)}{1+\delta} + \frac{u(B)}{1+\delta} \qquad (1)$$

where u is an increasing and strictly concave utility function; x_0 and x_1 represent household consumption of the first and second periods respectively; B is the bequest of one generation to the next generation; δ is the discount rate of time preference.

The consumption x of the household in two periods consists of two goods: those purchased in the market x_{m_j} and those that are produced at home, $x_{h_j} = f(.)$. The contributions of children and grandparents are in the form of participation in home production, with the number of children, n, and the number of old people in the household, m, (both assumed to be exogenous), and are taken into account as follows:

$$x_o = x_{m_0} + f(a_2 t_2^{h_0} + n a_3 t_3^{h_0} + m a_4 t_4^{h_0}) \qquad (2)$$

$$x_1 = x_{m_1} + f(a_2 t_2^{h_1}) \qquad (3)$$

where $t_i^{h_0}$ is the time spent by household member i (i=2, 3, 4) in household production and a_i (i=2, 3, 4 referring to the mother, the child and the grandfather/grandmother respectively) is a marginal productivity parameter associated with household member i's time allocated to household production. Differences in a_i across the household reflect

different marginal productivities of the members in household production (housework). The production function f has a standard curvature ($f' > 0$; $f'' < 0$). At the second stage of life, the children switch to market work so they do not make a contribution to home production. Their second stage income is considered to be part of household income.

In the interest of tractability and ease of exposition, two more assumptions are made: first, prices of commodities consumed are normalised to one and secondly, in line with Liu (1999), the leisure time of each member of the family is exogenously set equal to zero. Therefore each member of the family will have the same time endowment $t_i = T$ to allocate between market activities and housework. The grandparents are assumed to devote their whole time to housework. Children, assumed identical in terms of contribution to home production, also only do housework in the first period. It is also assumed that the bequest B received from the old is not spent until the period after it is received.

The budget constraint of the household, which states that expenditure equals income, is as follows:

$$A + \sum_{i=1}^{2} t_i^{m_0} w_i^0 + \frac{1}{1+r}\left(\sum_{i=1}^{2} t_i^{m_1} w_i^1 + n t_3^{m_1} w_3^1\right) = nc_3 + mc_4 + x_{m_0} + \frac{x_{m_1}}{1+r} + \frac{B}{1+r} \qquad (4)$$

where:

w_i^j : wage rate for person i in period j, (i=1, 2, 3 and j=0, 1) and assumed to be constant

i-subscript: 1 = father; 2 = mother; 3 = children

j-subscript: 0 = first period; 1 = second period of the household life

x_{m_j} : market goods consumed in period j (j=0,1)

n: number of children in the household

m: number of old people in the household

$t_i^{m_j}$: time spent at market work, (if j=0; i=1, 2 and if j= 1; i=1, 2, 3)

$t_i^{h_j}$: time spent at housework, (if j=0; i= 2, 3, 4 and if j= 1; i=2)

c_3 : cost per child of raising children

c_4 : cost per old person of caring for old people

T: total time endowment of each individual in each period

a_i: productivity coefficients of member i in household activity

r : interest rate

δ: discount rate of time preference

A: household assets and other non-earning sources of income

B: bequest of the old generation (assumed constant)

Since the father works only at the factory, he devotes all his time to market work and does not do anything at home. Thus his time allocation is

$$T = t_1^{m_j} \tag{5}$$

And since the mother does both market work and housework, the time constraint of the mother in period j is

$$T = t_2^{h_j} + t_2^{m_j} \tag{6}$$

where, j=0,1 for the two periods of the households.

Children and old people help the mother to do housework so their time constraints are

$$T = t_3^{h_0} \quad \text{and} \quad T = t_4^{h_0} \tag{7}$$

Finally, in the second period of their life, children specialise in market work. Thus

$$T = t_4^{m} \tag{7a}$$

The non-negativity constraints are also assumed to hold:

$$x_{m_j} \geq 0;\ t_i^{m_j} \geq 0;\ t_i^{h_j} \geq 0; \quad (i=1, 2\ ; j=0, 1) \tag{8}$$

The Lagrangian for optimisation of (1) subject to (2)-(8) is

$$L = u(x_0) + \frac{u(x_1)}{1+\delta} + \frac{u(B)}{1+\delta} +$$
$$+ \lambda_1 \left[A + t_1^{m_0} w_1 + t_2^{m_0} w_2 + \frac{t_1^{m_1} w_1 + t_2^{m_1} w_2 + n t_3^{m_1} w_3}{1+r} - nc_3 - mc_4 - x_{m_0} - \frac{x_{m_1}}{1+r} - \frac{B}{1+r} \right] +$$
$$+ \lambda_2 \left[x_{m_0} + f(a_2 t_2^{h_0} + n a_3 t_3^{h_0} + m a_4 t_4^{h_0}) - x_0 \right] + \lambda_3 \left[x_{m_1} + f(a_2 t_2^{h_1}) - x_1 \right] +$$
$$+ \lambda_4 \left(T - t_1^{m_0} \right) + \lambda_5 (T - t_2^{h_0} - t_2^{m_0}) + \lambda_6 (T - t_3^{h_0}) + \lambda_7 (T - t_4^{h_0}) + \lambda_8 (T - t_1^{m_1}) +$$
$$+ \lambda_9 (T - t_2^{m_1} - t_2^{h_1}) + \lambda_{10} \left(T - t_3^{m_1} \right)$$

where $\lambda_1 - \lambda_{10}$ are the Lagrange multipliers.

The necessary conditions for an optimum are as follows:

$$\frac{\partial L}{\partial x_0} = u'(x_0) - \lambda_2 = 0 \tag{9}$$

$$\frac{\partial L}{\partial x_1} = \frac{u'(x_1)}{1+\delta} - \lambda_3 = 0 \tag{10}$$

$$\frac{\partial L}{\partial x_{m_0}} = -\lambda_1 + \lambda_2 = 0 \tag{11}$$

$$\frac{\partial L}{\partial x_{m_1}} = -\frac{\lambda_1}{1+r} + \lambda_3 = 0 \tag{12}$$

$$\frac{\partial L}{\partial t_1^{m_0}} = \lambda_1 w_1 - \lambda_4 = 0 \tag{13}$$

$$\frac{\partial L}{\partial t_2^{m_0}} = \lambda_1 w_2 - \lambda_5 = 0 \tag{14}$$

$$\frac{\partial L}{\partial t_1^{m_1}} = \frac{\lambda_1 w_1}{1+r} - \lambda_8 = 0 \tag{15}$$

$$\frac{\partial L}{\partial t_2^{m_1}} = \frac{\lambda_1 w_2}{1+r} - \lambda_9 = 0 \tag{16}$$

$$\frac{\partial L}{\partial t_2^{h_0}} = \lambda_2 a_2 f'(.) - \lambda_5 = 0 \tag{17}$$

$$\frac{\partial L}{\partial t_2^{h_1}} = \lambda_3 a_2 f'(.) - \lambda_9 = 0 \tag{18}$$

$$\frac{\partial L}{\partial t_3^{h_0}} = \lambda_2 n a_3 f'(.) - \lambda_6 = 0 \tag{19}$$

$$\frac{\partial L}{\partial t_3^{m_1}} = \frac{\lambda_1 n w_3}{1+r} - \lambda_{10} = 0 \tag{20}$$

$$\frac{\partial L}{\partial B} = \frac{u'(B)}{1+\delta} - \frac{\lambda_1}{1+r} \tag{21}$$

From equations (9), (10), (11), (12) and (21), we can derive the well-known result of the standard life cycle model:

$$u'(x_0) = \frac{u'(x_1)(1+r)}{1+\delta} \tag{22}$$

and

$$\frac{u'(B)}{1+\delta} = \frac{u'(x_0)}{1+r} = \frac{u'(x_1)}{1+\delta} \tag{23}$$

where $u'(x_j)$ is the marginal utility of consumption of spouses in period j, where j=0,1. These expressions reflect the relationship between marginal utility of consumption at different periods in the life of the household. If the interest rate is equal to the discount rate, the marginal utility of consumption is the same in both periods of the household's life.

From equations (14) and (17) we have

$$a_2 f'(a_2 t_2^{h_0} + n a_3 T + m a_4 T) = w_2 \tag{24}$$

Also, equations (12), (16) and (18) yield

$$a_2 f'(a_2 t_2^{h_1}) = w_2 \tag{25}$$

That means, at the optimum, for the mother, the marginal product of an additional hour of market work, which is the wage rate, is equal to the marginal product of an additional hour of housework.

As a result, we have a system of nine equations, namely, equations (22), (23), (24), (25), the equation of the budget constraint of the household that is rewritten for convenience as

$$A + \sum_{i=1}^{2} t_i^{m_0} w_i^0 + \frac{1}{1+r}\left(\sum_{i=1}^{2} t_i^{m_1} w_i^1 + nTw_3^1\right) = nc_3 + mc_4 + x_{m_0} + \frac{x_{m_1}}{1+r} + \frac{B}{1+r} \tag{26}$$

the composite household goods,

$$x_o = x_{m_0} + f(a_2 t_2^{h_0} + na_3 t_3^{h_0} + ma_4 t_4^{h_0}) \tag{27}$$

$$x_1 = x_{m_1} + f(a_2 t_2^{h_1}) \tag{28}$$

and the time constraint of the mother in the two periods,

$$T = t_2^{m_0} + t_2^{h_0} \tag{29}$$

$$T = t_2^{m_1} + t_2^{h_1} \tag{30}$$

This system of nine equations (22)-(30) can, in principle, be solved for the nine endogenous variables $B, x_0, x_1, x_{m_0}, x_{m_1}, t_2^{m_0}, t_2^{h_0}, t_2^{m_1}, t_2^{h_1}$ to obtain demand equations of the household. We are also able to derive the comparative static effects of the exogenous variables, *n, m, w_1, w_2, r, δ,* and *A* on household consumption.

4.2 Some results of comparative static analysis

Our focus, however, is the saving of the household. Using the definition of saving, *S*, as a residual of income after spending for consumption, household saving in the first period can be expressed as follows:

$$S_0 = A_0 + Tw_1 + t_2^{m_0} w_2 - nc_3 - mc_4 - x_{m_0} \tag{31}$$

If we assume the interest rate is zero, saving in the second period is[11]

$$S_1 = A_1 + Tw_1 + t_2^{m_1} w_2 + nt_3^{m_1} w_3 - nc_3 - x_{m_1} = B \tag{32}$$

[11] This assumption is in line with Laitner (1997). In fact, the interest rate affects household saving in two ways: via the income effect and the substitution effect. On the one hand, a rise of the interest rate will increase the future value of current assets and labour income. This income effect causes consumption to rise and saving to fall. On the other hand, a higher interest rate implies an increase in the opportunity cost of current consumption (future consumption is relatively cheaper) and thus induces a fall in current consumption and a rise in saving. This ambiguity is in line with the findings of a number of empirical studies about the effects of the interest rate on the consumption and saving of individuals and households. Nevertheless, the prevalence of liquidity constraints, uncertainty, precautionary motives for saving, especially in developing countries, will probably reinforce the substitution effect encouraging households to save more.

As assumed, at the end of the second period, the parents make a bequest to the next generation by giving their entire saving to their children; thus the saving of the second period is equal to the amount of the bequest: $S_1 = B$.

To investigate the effect of the number of children, n, on the saving of the household, differentiate S_0 with respect to n in equation (31) to obtain

$$\frac{\partial S_0}{\partial n} = \frac{\partial A_0}{\partial n} + \frac{\partial (Tw_1)}{\partial n} + t_2^{m_0} \frac{\partial w_2}{\partial n} + w_2 \frac{\partial t_2^{m_0}}{\partial n} - c_3 - \frac{\partial x_{m_0}}{\partial n} \qquad (33)$$

The first three terms on the right hand side are zero because the number of children does not affect either the exogenous income, the time spent working by the father, or the exogenous wage rate. The father has already devoted all his time endowment to the market activity. The fourth and the sixth terms do not vanish though since the number of children doing housework will affect the amount of time the mother has to spend on housework.

To obtain an expression for these effects, from (24), take the derivative with respect to n

$$a_2 f''.(a_3 T + a_2 \frac{\partial t_2^{h_0}}{\partial n}) = \frac{\partial w_2^0}{\partial n} = 0$$

This implies

$$\frac{\partial t_2^{h_0}}{\partial n} = -\frac{a_3 T}{a_2} < 0 \tag{34}$$

Differentiating equation (29) with respect to n, rearranging and then using equation (34) we have

$$\frac{\partial t_2^{m_0}}{\partial n} = \frac{\partial T}{\partial n} - \frac{\partial t_2^{h_0}}{\partial n} = \frac{a_3 T}{a_2} > 0 \tag{35}$$

Equations (34) and (35) state that, in the first period, increasing the number of children will induce the wife to allocate more of her time to the market and less to housework. This result seems reasonable for developing countries because the more children in the household, the more pressure there is on the income of the household and, as a result, the more the wife is willing to work in the market for extra income. On the other hand, the more children in the household, the more labour time they can provide for housework and the more they can substitute for the mother's time at home. This conclusion is similar to the conclusion of Liu (1999) highlighting that children's time in producing home goods is substitutable for the mother's. Evidence of the significant role of children in home production in developing countries may be found in Cain, (1980) and Hill (1983).

In equation (33), to find the second unknown term, $\frac{\partial x_{m_0}}{\partial n}$, differentiating (23) with respect to n yields

$$u''_{x_0}\frac{\partial x_0}{\partial n}=\frac{u''_{x_1}}{(1+\delta)}\frac{\partial x_1}{\partial n}=\frac{u''_B}{(1+\delta)}\frac{\partial B}{\partial n} \tag{36}$$

Differentiating (27) with respect to n and using the result of (34) we have

$$\frac{\partial x_0}{\partial n}=\frac{\partial x_{m_0}}{\partial n} \tag{37}$$

Substituting (37) into (36) and rearranging yields

$$\frac{\partial x_{m_0}}{\partial n}=\frac{u''_{x_1}}{u''_{x_0}(1+\delta)}\frac{\partial x_1}{\partial n} \tag{38}$$

Also from (36) we have

$$\frac{\partial x_1}{\partial n}=\frac{u''_B}{u''_{x_1}}\frac{\partial B}{\partial n} \tag{39}$$

Substituting (39) into (38), and after simplifying and using the fact that saving at the end of the second period equals the bequest ($S_1=B$), we have

$$\frac{\partial x_{m_0}}{\partial n}=\frac{1}{(1+\delta)}\frac{u''_B}{u''_{x_0}}\frac{\partial B}{\partial n}=\frac{1}{(1+\delta)}\frac{u''_{S_1}}{u''_{x_0}}\frac{\partial S_1}{\partial n} \tag{40}$$

The last step is to substitute (35) and (40) into (33) to obtain

$$\frac{\partial S_0}{\partial n} = w_2 \frac{a_3 T}{a_2} - c_3 - \frac{1}{(1+\delta)} \frac{u''_{S_1}}{u''_{x_0}} \frac{\partial S_1}{\partial n} \tag{41}$$

This is the relationship between the effects of the number of children on saving in the first and second periods $\frac{\partial S_0}{\partial n}$ and $\frac{\partial S_1}{\partial n}$ respectively.

In order to determine the sign of the above expressions we have to find $\frac{\partial S_1}{\partial n}$

Differentiating both sides of (32) yields

$$\frac{\partial S_1}{\partial n} = w_2 \frac{\partial t_2^{m_1}}{\partial n} + t_3^{m_1} w_3 - c_3 - \frac{\partial x_{m_1}}{\partial n} = \frac{\partial B}{\partial n} \tag{42}$$

From (25), after differentiating both sides and using the fact that $\frac{\partial w_2}{\partial n} = 0$ we have

$$\frac{\partial t_2^{h_1}}{\partial n} = 0 \tag{43}$$

Differentiating (30) and using (43) we have

$$\frac{\partial t_2^{m_1}}{\partial n} = 0 \tag{44}$$

This means that, in the second period, as the children have grown up and some have earnings, there is no longer any pressure from the number of children on the labour supply of the mother to the market.

After differentiating both sides of (28) and using the result of (43) this gives

$$\frac{\partial x_{m_1}}{\partial n} = \frac{\partial x_1}{\partial n} \tag{45}$$

Equations (39) and (45) give

$$\frac{\partial x_1}{\partial n} = \frac{u''_B}{u''_{x_1}} \frac{\partial B}{\partial n} = \frac{\partial x_{m_1}}{\partial n} \tag{46}$$

Substituting (44) and (46) into (42) yields

$$\frac{\partial S_1}{\partial n} = t_3^{m_1} w_3 - \frac{u''_B}{u''_{x_1}} \frac{\partial B}{\partial n} - c_3 = t_3^{m_1} w_3 - \frac{u''_{S_1}}{u''_{x_1}} \frac{\partial S_1}{\partial n} - c_3 = \frac{t_3^{m_1} w_3 - c_3}{1 + \frac{u''_{S_1}}{u''_{x_1}}} \tag{47}$$

Since the denominator is positive, whether the sign of the above expression is positive or negative depends on the relationship between $t_3^{m_1} w_3$ and c_3. In other words, in the second period, other things equal, the increasing number of children induces the saving of the household to increase or decrease depending on whether the income that a child can earn in the market ($t_3^{m_1} w_3$) outweighs the cost (c_3) of raising him/her or not. If the market earnings

of a child are greater than the cost of raising him/her, then increasing the number of children in the family will cause the saving of the household to increase as well. Because the sign of this expression is ambiguous we will leave the conclusion for empirical testing.

The sign of the derivative of first period saving with respect to the number of children is also ambiguous. This can be verified either by substituting (47) into (41) or, by a shorter method, looking at equation (33), which is recalled here for convenience:

$$\frac{\partial S_0}{\partial n} = \frac{\partial A_0}{\partial n} + \frac{\partial (Tw_1)}{\partial n} + t_2^{m_0} \frac{\partial w_2}{\partial n} + w_2 \frac{\partial t_2^{m_0}}{\partial n} - c_3 - \frac{\partial x_{m_0}}{\partial n}$$

The first three terms on the right hand side are zero because the individual household takes things such as the wage as given. The fourth and the fifth represent the income effect of the number of children on saving, and the last term represents the substitution effect of that number on the saving of the household. It is clear that whether the sign of the expression is positive or negative depends on which effect is stronger. The sign of the effect of the number of children on household saving again has to be left for empirical study.

Since the number of children, *n*, and the number of old people, *m*, have similar roles in the mathematical expression in equation (31) the above conclusions for the effect of the number of children on household saving can also be applied to the number of the old people of the household. These conclusions, in fact, are similar to the conclusions of a number of studies on saving and demographic changes, such as Hammer (1986a), and

Kelley (1988 and 1996)[12]. In spite of the inconclusive sign of the effect of the number of children on household saving, from the proposed model, it is possible to conclude that the number of children and old people plays an important role in household saving.

The static analysis of other factors such as wage rates and assets and non-earning income of the parents on household saving also gives the following results:

$\frac{\partial S}{\partial w_i} > 0$, $\frac{\partial S}{\partial A^{ne}} > 0$ where i=1,2; and A^{ne} is non-earned income and assets.

That is, saving of the household increases as income (wage rate) and non-earned income and assets of the parents increase.

4.3 Conclusions

This study has developed a simple model that combines the approaches of the LCH and Becker's household production functions with bequests, and the features of an extended household in developing countries. This model was used to analyse household saving. With some simplifying assumptions, the model is consistent with the conclusions of the standard LCH model about the equivalence of the marginal utility of consumption over the periods of life of the household and the conclusion of Becker's home production type model about

[12] Kelley (1996) has pointed out that the impact of children on household spending can be complex because children may (1) substitute for other forms of consumption; (2) contribute directly to household market and nonmarket income; (3) encourage parents to work more (or less); (4) stimulate the amassing (or reduction) of estates; and (5) encourage (or discourage) the accumulation of certain types of assets (for example, education, or farm implements).

the substitution of labour time of the children for labour time of the mother. With respect to household saving, the model suggests two main results. First, household saving depends on a number of factors, namely, the income of the parents, the non-earning income and assets of the household, the expenditure of the parents, the costs of raising children and caring for old people and the demographic factors such as the number of old people and the number of children in the household. Second, the response of saving to a change in its demographic determinants is ambiguous: increasing the number of children (old people) may cause household saving to increase or decrease, depending on whether the earnings of children (old people) outweigh the cost of raising (caring for) them.

These results can provide a framework for conducting an empirical study of the effects of demographic factors on saving. The model also may provide a framework for empirically investigating problems other than saving. For example, the model implies that the wife's labour supply decision is a function of the husband's and wife's wages, the number of children and old people in the household and the parameters of the utility and production functions. For an extension, using different scenarios of time allocations of household members in the model would also allow us to investigate further the intra-family economics of households.

Chapter 5

Econometric models and estimations

The aim of this chapter is to test empirically the hypotheses drawn from the previous chapter. For the purpose of comparing the effects of young and old dependent people of a household on household saving with the findings of the related studies, the chapter uses several econometric models using alternative variables for the number of aged dependents and children. The chapter also determines the effects of some demographic factors of a household on household saving such as age, education, gender and marital status of the household head. The structure of the chapter is as follows. Section 5.1 discusses data and data issues in conducting the empirical research, section 5.2 presents the hypotheses and discusses the econometric models used to test the hypotheses, section 5.3 analyses the estimation results of the econometric studies and compares the results with the findings of related studies of other developing countries. Section 5.4 presents the main conclusions.

5.1 Data and data issues

The data used for this study are taken from the Vietnam Household Living Standards Survey (VLSS) conducted by the World Bank, the State Planning Committee and the General Statistical Office in 1992-93. The survey collected information on different aspects of 4800 households, including demographic characteristics, income and expenditure,

employment, health, education, saving and credits, and migration status. Some information was at the individual level and some was at the household level.

Despite the standard format of the questionnaire, which has been applied in many developing countries, the information collected in this survey was not of the desired quality. Under-statement of income was common, very severe in some cases, leading to certain inconsistencies in the data. For example, the number of households that had expenditure larger than income during a year is significant. There are a number of households that had very small or zero total income. As a result, if saving is defined as the difference between income and expenditure, the number of households that have negative saving is also significant. However, the negative saving observations are retained in the econometric regressions to avoid problems of bias resulting from the truncation of the sample.

Another point to make is that the survey was conducted in Vietnam in 1992-1993, only a few years after 'Doimoi' was initiated. At that time, one could imagine that the attitude of the population towards providing personal information might have been not very open or truthful. Also, the lack of experience of the cadres involved in the statistical survey could have affected the quality of collection and processing of the data. As a result, the data set could not avoid problems of missing and unreliable observations. Bearing this in mind, the data set has been subjected to detailed scrutiny: some outliers and implausible observations have been dropped. Nevertheless, care should be taken in using information and interpreting the results based on the remaining observations.

5.2 Econometric specification and econometric models

5.2.1 The hypotheses

Our objective is to determine empirically whether factors such as income and assets of households, the number of old people and the number of children play an important role in determining the saving behaviour of households. In other words, in the econometric models, our hypothesis is that the coefficients of these variables (or the ones that proxy for them) are statistically significant and different from zero.

The second hypothesis relates to the signs of the variables. We expect the effect of the number of children on household saving for the whole sample to be negative. This is because the income which children may earn is unlikely to outweigh the cost of raising them (the wages of children are usually low). The effect of the number of old people on household saving may be either positive or negative. It is expected that the coefficient on household income is positive.

5.2.2 The econometric models

The interest rate is not included as a variable in the saving equations because it is assumed that all households face a similar interest rate. A point worth noting in the context of a developing country like Vietnam is that the financial market does not function well and is rather fragmented. This means that different households are likely to face different interest rates. However, the difficulty in our case is that the data set does not provide information

on the differences in the interest rates between households. This situation leads to an assumption that interest rates are the same for all households and thus the interest rate variable has no variation across households. In the econometric model, this means the impact of interest rates is captured in the intercept term and cannot be analysed separately. This assumption is in line with the assumption of a zero interest rate in analysing the effect of some factors on household saving in Section 4.2 in the previous Chapter. Therefore, it is reasonable to use this assumption in testing the conclusions of the theoretical chapter using econometric saving models.[13]

The saving variable is calculated as the difference between current income and current expenditure of households. Therefore, in order to avoid the problem of perfect collinearity, expenditure and the income variables cannot both be included in the right hand side of the equations for saving. Given our special interest in the saving-income relationship, and in response to the usual practice, we include income as an independent variable rather than specify the dependent variable as the ratio of saving to the total income of the household. Besides the saving level as a dependent variable, some estimations have used per capita saving, as in Kumcu (1989). The models using per capita saving and other per capita variables such as per capita income and per capita assets would have the problem that they build in a dependence on household size, the components of which we wish to use as right-hand side variables. Moreover, the household in this study is considered as a unit with particular demographic characteristics. The models using the saving level seem to be more directly based on the theoretical model of Chapter 4 and take into account the effect of

[13] As pointed out before, the relationship between saving and interest rates is indeterminate because of potentially offsetting income and substitution effects. Empirical studies also give inconclusive evidence, for example, Boskin (1978), Summers (1981), Hall (1988) and Skinner and Feenberg (1992).

family size via the number of children and number of old people, as well as household size itself, as instrumental variables. For these reasons, the models using the saving level are seen as the most appropriate of all the alternatives in capturing household saving behaviour in the present context.

Based on data availability, and in line with some studies, for example, Montgomery (1986), which extended a life-cycle model to consider the effect of the variables measuring demographics, three econometric models are suggested below to explain the saving of two types of households: households with old people (extended households) and households that do not have old people (young households).

The first model uses the number of children (aged up to seventeen), NCHILD, and the number of old people (aged older than sixty-four), NOLD, as independent variables to detect the effects of dependent family members on household saving. The model also uses income, Y; assets, W; age of household head, AGE; and education (years of schooling) of household heads, EDUY, as independent variables. Two dummy variables for gender, MALE, and for marital status, MAR, of the household head are also included. The first model has the following form:

$$SAVING = \alpha_0 + \alpha_1 Y + \alpha_2 W + \alpha_3 AGE + \alpha_4 EDUY + \alpha_5 NCHIL + \alpha_6 NOLD + \alpha_7 MAR + \alpha_8 MALE + \varepsilon \quad (1)$$

where the variables are defined as in Appendix 5.1; and ε is a random disturbance term. This model is applied to test the hypotheses for households containing old people. For the

households that do not have old people, the same model is applied with the variable NOLD is set to be 0.

The second model uses dependency ratios to represent the number of dependent people. The dependency ratio is extensively used in the saving literature, especially in the studies using macro data, for example, Leff (1969), Modigliani (1970), Modigliani and Sterling (1983), Mason (1987 and 1988), Taylor (1995) and others. Unlike many other studies, this study has two separate dependency ratios: one for young dependents and the other for old dependents, in each case the ratio being the number of dependents relative to the number of *working* people in the household. This enables us to test the conclusions of the model of the previous chapter and compare the results with those of some related studies, which estimate the effects of young and old dependency ratios on saving, for example, Gupta (1971), Kelley (1973), Ling and Peng (1996) and Heller and Symansky (1997). The second model has the following form:

$$SAVING = \beta_0 + \beta_1 Y + \beta_2 W + \beta_3 AGE + \beta_4 EDUY + \beta_5 D1 + \beta_6 D2 + \beta_7 MAR + \beta_8 MALE + \eta \quad (2)$$

where D1 and D2 are the young and the old dependency ratios respectively and are defined as in Appendix 5.1; and η is a random disturbance term.

The third model, in line with Schmidt-Hebbel *et al.* (1992) and Weil (1994), uses another definition of the dependency ratio in the regression analysis. The dependency ratios in this case are the ratios of children or old people to the total number of people in the households

(the size of the household), P1 and P2 respectively. So the difference between the second model and the third model is in using the variables P1 and P2 instead of D1 and D2. The third model has the following form:

$$SAVING = \gamma_0 + \gamma_1 Y + \gamma_2 W + \gamma_3 AGE + \gamma_4 EDUY + \gamma_5 P1 + \gamma_6 P2 + \gamma_7 MAR + \gamma_8 MALE + \mu \quad (3)$$

where P1 and P2 (which are different from D1 and D2) are the young and the old dependent ratios respectively and are defined as in Appendix 5.1; μ is a random disturbance term.

As pointed out before, under-reporting of income is common in the household surveys. This may well have an effect on the estimated results. Since there is a possibility of systematic bias in income reporting, we assume that all households have the same behaviour in terms of understating their income and the variation of the variable of the under-reported income can be the same as the variation of the variable of true-reported income. As a consequence, the coefficients of income variables or the estimated marginal propensity to save out of income in the saving models can still be used for analysis. The presence of the variables for age and education requires an explanation. The age variable may enter these models via the life cycle idea of income and saving, which yields saving as an inverse U- function of age. There are two problems: (i) it would be difficult to take into account the age of the husband and the wife of the household simultaneously; and (ii) we cannot capture age in a meaningful way in a two-period model such as that in Chapter 4 in which all saving is done by the parents. With respect to (i) there are, possibly, two

alternative approaches: either use the age of the head of the household or use the average age of two members of the household. This study follows the first approach. To cope with (ii), a theoretical model with more periods or a continuous time model is necessary. Since the relationship between the age distribution and saving can be of either sign along the inverse U-shape, the effect of age on saving has to rely on the final results of the empirical study. As it stands, the model does allow for saving in two periods (S_0 and S_1), but a bequest (that is S_1) is motivated differently from saving for future consumption. Thus S_0 and S_1 in Chapter 4 may not capture what is normally meant by saving when young and saving when old.

The rationale behind the use of the education variable in the models has two sources. On the one hand, education may affect income according to the concept of Friedman's permanent income. Since education usually plays a very important role in assuring a certain life-cycle income, it is argued that education will bring a more stable income to individuals and households. And since saving is also an increasing function of the total expected life-cycle income, the education level of an individual will eventually affect the saving of individuals and households through its impact on income. As a result, higher education may have a positive effect on saving. On the other hand, if one takes the precautionary motive and liquidity constraints into account, a higher education level raises the household head's ability to assess the economic environment and balance the budget of his or her family in its best interest. In developing countries, where uncertainty is high and liquidity constraints are severe (Speight and White 1995), education could help an individual or household cope better with various sources of uncertainty of income and constraints of borrowing, thus raising saving. Therefore, via this channel, the education level may also

have a positive impact on saving. As a result, it is expected that the sign of the coefficient of the education variable will be positive.

The two dummy variables representing gender and marital status of household heads are used in this study to capture other demographic factors. Marriage may have two effects on household saving. On the one hand, if both husband and wife have income earning opportunities, the "married households" can expect to have two permanent income sources. This will positively affect saving levels. Besides, marriage means a share of welfare and responsibility between husbands and wives. If the motive for precautionary saving is strong, marriage may also cause more saving because the welfare of all household members of the "married households" is taken into account. On the other hand, a single household head would have felt more greatly threatened by uncertainty and by being alone, so it would save more. This means marriage would cause households to save less. The two effects work in opposite directions and thus the final effect should rely on the empirical results.

The gender of the household head may cause different saving behaviour amongst households due to the characteristics of labour division. Men tend to take more responsibility for earning income while women tend to specialise in housework and raising children. As a consequence, women are believed to be better than men in organising housework, managing the budget and arranging household life in an Asian developing country like Vietnam. The data of the VLSS show that mean per capita income of female-headed households is about 26 per cent higher than that of male-headed households (VND 2090 thousand versus VND 1650 thousand). Dollar *et al.* (1998) also found a similar

pattern such that, while the mean per capita expenditures of members of female-headed households were higher than those of male-headed households, their poverty measures were lower. The World Bank (1999a) has pointed out that, as is common with households in developing countries, members of female-headed households are usually materially better-off than male-headed households. With such characteristics, a household with a female head may save more than one headed by a male. Thus, it is expected that the sign of the coefficient of the dummy variable of gender to be negative.

As mentioned above, in developing countries such as Vietnam, problems such as uncertainty and liquidity constraints are widespread. Mutual help among family members and bequests, are common. Therefore, besides the lifecycle saving motive, other saving motives such as precaution and inheritance transfer are also likely to be important. Ideally, the information reported in the data set would enable us to take into account the effects of these motives on household saving. Alternatively, panel data on households, as used by Jianakoplos *et al.* (1996), may suffice. But in our case the data set has neither reported information on these motives nor is it panel data. Therefore, instead of taking precautionary saving and inheritance saving into account explicitly, these factors are used simply as a means of interpreting the econometric results. In the context of uncertainty, the optimal decisions of households will depend not only on the market interest rate but also on risk attitudes and subjective discount rates. The subjective discount rates are likely to vary across households. While it is very difficult to detect the size and the role of subjective discount rates due to lack of information, the influence of this factor may be represented by the various demographic factors in the saving functions. For example, age of household head could incorporate differences in risk attitudes. Young people are more likely to be risk

takers than old people since if the young make mistakes they may still have time to correct their mistakes.

A number of econometric problems arise. Common to the case of income, consumption and saving, the problem of heteroscedasticity cannot be avoided. The variance of the error terms increases with both income and assets. This means, even if the estimates are unbiased and consistent, it is impossible to rely on the usual inferential procedures. The generalised least squares procedure therefore needs to be applied to gain efficient variances of coefficients. Another problem relates to the endogeneity of the variables used. For example, income and assets in the models may be correlated with the disturbance term. An estimation by ordinary least squares (OLS) would give biased and inconsistent estimates of the parameters. To deal with this problem, the specification tests developed by Hausman (1978) and Wu (1973) have been conducted to test for the endogeneity of income and assets variables. The null hypothesis of exogeneity of the income variable was rejected at the 1 per cent level while the null hypothesis of the assets variable was not, even at the 10 per cent level. Thus, we cannot treat the income variable as exogenous, and the two-stage least squares method (2SLS) may be used.

5.3 Estimation results and interpretation

This subsection estimates three models of saving (1)-(3). The estimation results are obtained for two types of household, extended households and young households. These results are summarised in Tables 5.1 and 5.2.

The sample used excluded unreasonable observations and outliers. The exogenous variables are age of household head (AGE), years of schooling of household head (EDUY), the number of children (NCHILD), the number of old people (NOLD), marital status (MAR) and gender of household head (MALE). Other exogenous variables representing the number of children and old people are the young dependency ratio and the old dependency ratio, D1 or D2 and P1 or P2 respectively (see definitions of the variables in Appendix 5.1). The additional instrument variables used in this study include age and education (year of schooling) of the household head's spouse, household size and geographical region. The estimation results were obtained after using White's method (1980) to calculate robust variances and covariances to correct for heteroscedasticity.

As often happens in estimations which use consumption and saving levels, the statistical fit was quite good in the regressions for models using cross-section data: the coefficients of multiple determination are quite high, ranging from 0.65 to 0.70. Overall, the results of the estimation supported the hypotheses concerning the role of income, assets, education, number of children, marital status and gender of the household head in determining household saving. The age of the household head and the number of old people were found to have no significant effect on household saving.

Table 5.1: Saving of extended households

Variables	*Model 1*		*Model 2*		*Model 3*	
	Coefficients	**t-ratios**	**Coefficients**	**t-ratios**	**Coefficients**	**t-ratios**
Y	0.60**	4.56	0.56**	4.71	0.48**	3.72
W	-0.16**	-2.48	-0.15**	-2.48	-0.11*	-1.69
AGE	0.004	0.44	-0.01	0.75	0.01	0.67
EDUY	0.14**	3.44	0.15**	3.40	0.13**	2.87
NCHILD	-0.23**	-2.42				
NOLD	-0.04	-0.12				
D1			-0.49**	-3.40		
D2			-0.48	-1.04		
P1					-1.37**	-2.22
P2					-1.41	-1.38
MAR	0.74*	1.92	0.71*	1.74	0.86*	1.94
GEN	-0.66**	-1.96	-0.80**	-2.31	-0.86**	-2.33
Constant	-1866.84**	-2.76	-1667.71**	-2.13	-1335.94*	-1.72
Number of observations	3972		3911		3972	
R^2	0.70		0.68		0.65	

Note: The dependent variable is the saving level, in million dong. The asterisks * and ** denote the significance levels of 10 per cent and 5 per cent respectively. Income (Y) and assets (W) are in million dong. A summary of characteristics of the variables is given in Appendix 5.2.

Table 5.2: Saving of the households without old people

Variables	*Model 1*		*Model 2*		*Model 3*	
	Coefficients	**t-ratios**	**Coefficients**	**t-ratios**	**Coefficients**	**t-ratios**
Y	0.51**	5.56	0.51**	6.41	0.47**	5.52
W	-0.13**	-2.62	-0.14**	-2.95	-0.12**	-2.48
AGE	0.001	0.09	-0.002	-0.19	-0.002	-0.19
EDUY	0.11**	2.58	0.12**	2.78	0.12**	2.64
NCHILD	-0.19**	-2.20				
D1			-0.46**	-3.02		
P1					-1.37**	-2.34
MAR	1.08**	2.27	1.00**	2.09	1.13**	2.26
GEN	-0.99**	-2.60	-1.08**	-2.78	-1.12**	-2.78
Constant	-1206.88**	-1.69	-850.06	-1.12	-678.67	-0.84
Number of observations	3237		3237		3237	
R^2	0.70		0.69		0.67	

Note: The dependent variable is the saving level, in million dong. The asterisks * and ** denote the significance levels of 10 per cent and 5 per cent respectively. Income (Y) and assets (W) are in million dong.

In all the models applied for two types of household (with and without old people), household income was shown to have a significant positive effect on the household saving. The marginal propensities to save out of income (*mps*) are found to be in the range from 0.47 to 0.60. This range seems relatively high compared to the average level for developing countries, except for the levels found in studies of farmers in Yugoslavia and Korea (Lluch *et al.* 1977) which are 0.75 and 0.54 respectively. The *mps* found in this study can be considered to be at the upper tail of the distribution when compared to the *mps* of 0.48 for the households of India, (Gupta 1970), 0.45 for China (Ma 1993), 0.30 for the rural households of Chile (Betancourt 1977), and 11 per cent and 25 per cent for rural and urban households, respectively, of Mexico (Lluch *et al.* 1977).

Assets of the household head were found to have a significant negative effect on saving in all the regressions using the saving level. These results are similar to the review of Snyder (1972) of developing countries. A possible mathematical explanation for the negative sign of household assets is provided in Appendix 5.3. The intuitive explanation for it may also be related to the presence of financial and liquid assets (gold, dollars), because these assets lessen a household's dependence on current income sources. When income declines temporarily, a household can easily draw on them to maintain its consumption level. Hence, holding a higher stock of assets allows a household to maintain its consumption, thus depressing current saving. *Ceteris paribus*, an increase in the assets of a household by one thousand dong is likely to make that household save less in a range from 110 to 160 dong.

There is no evidence to suggest that a household will save less as the age of the household head increases. This is possibly because saving of the household as a whole is the contribution by all the household members, including young ones. In the extended households the positive saving of young working-age members of the household may offset the run-down in saving determined by the saving-age behaviour of the household head.[14]

The number of dependent children (and related variables) appears to have a negative impact on saving in all versions of the models of the saving level. These findings are consistent with the results of the studies using aggregate data in developing countries, such as Leff (1969), Guptar (1971), Schmidt-Hebbel *et al.* (1992), and in studies of industrial countries, such as Modigliani and Sterling (1983), Feldstein (1980), Horioka (1991), and Weil (1994) (see Appendix 5.4). A noteworthy point is that, in the theoretical model, part of the cost of raising children is educating them, and the rewards include higher incomes for the household in later periods. Higher investment in childrens' education, a higher cost of raising children in the first period reduces saving. But second period income may depend positively on this. To the extent that households spend out of lifetime income, this also means that they may spend more on other things (meaning to save less) even in the first period if they expect higher second period incomes from this investment. Thus, the negative impact of children on saving found in the estimated models may be partly capturing this effect. To interpret the results in the saving model for the whole sample, an additional child in a household will, *ceteris paribus*, on average make the extended

[14] To detect the nonlinear pattern of household saving in the regressions, a variable of age squared should be used. However, in order to reduce a multicollinearity problem caused by using this variable, the variable of age squared is not included in the regression. The experiments conducted with the age squared showed that adding this variable does not influence much the result of the OLS regression but affects significantly the 2SLS results. Since the study is concerned more with the age effect rather than the pattern, the variable of age squared is skipped. In fact, this approach is not exceptional in many studies on consumption and saving.

household and the young household save less by 230 and 190 thousand dong per annum respectively.

The effect of education of the household head appeared to be very strong. In all the regressions, the sign of the coefficient of education was found to be positive, indicating that the household saving is likely to increase as the education level of the household head increases. This result supports our hypothesis about the sign of the coefficient of this factor. An additional year of schooling of the household head is found to make the household save more, from 110 to 150 thousand dong per annum, *ceteris paribus*. The high level of significance of the coefficient of the education variable, in addition to the income variable, is interesting. It could be a reflection of the fact that income is severely under-reported among the educated (see Phan Dinh The 1998). But the most likely explanation of the effect of education on saving is the presence of a strong precautionary motive for saving. With liquidity constraints and uncertainty prevalent, the more education the household head has, the more he or she is capable of organising the household budget and saving to face unexpected events (sickness, natural disasters). As a consequence, the findings seem to suggest the presence of a significant precautionary motive for household saving. The question of the forms in which households choose to save is considered in more detail in Chapter 7.

The marital status of the household head has the expected effect on household saving. The estimated coefficient of the marital status, MAR, was found to be statistically significant and positive in all saving regressions and thus supported our hypothesis. *Ceteris paribus*,

marriage is likely to shift up the household saving level by 740 to 1130 thousand dong per annum.

The negative sign of the coefficient of the dummy variable of gender, MALE, also supported our expectation. The findings showed that households, where the head is male, tend to save less than households that have a female as household head by a range of from 660 to 1120 thousand dong per annum. Although the magnitude is changed significantly across models, the consistency of the negative sign of the coefficients supports our argument about the labour division and the capability of a female household head to manage and organise household work. The result seems to be reasonable because, as for many other developing countries, mothers in Vietnam are observed to bear primary responsibility for nurturing children. Faced with limited income sources of the household, the mother may attempt to secure more stable sources of nurturing for her children. Thus mothers would manage the household's spending more carefully, and as a result, saving of households would tend to be higher if household heads were mothers.

5.4 Conclusions

This chapter has presented an empirical investigation of the saving behaviour of households in Vietnam using the data set of the VLSS. Several saving models have been applied for two types of household - the extended household with old people and the young household without old people - to analyse the determinants of household saving. The estimates of the saving determinants are relatively consistent across the models. Except for the age of the household head and the number of old people in the households, the

empirical results support relatively well our hypotheses about the role, and the signs of the coefficients of the determinant variables influencing household saving.

The results suggest that the *mps* of households in Vietnam is relatively high compared to typical levels in developing countries. While the assets of households (non-human capital) were found to have a negative impact, education (human capital) was found to have a positive effect on household saving. The fact that the education of the household head affects household saving positively suggests a possibly important role for precautionary saving, although this is difficult to test directly at this stage with the available data. Demographic factors were also found to have a significant effect. An increased number of children was found to be important in decreasing household saving. This suggests that while children may actively participate in household work, the cost of raising them still dominate the cost-benefit relationship of children and household saving. Marital status and the gender of the household head were found to be important in determining household saving. Households whose heads are married were found to save more than the households where the household head is single. Households that have female heads on average save more than households with male heads.

The results did not support the hypothesis regarding the role of old dependent people for the case of the whole sample. However, the significant impact of this demographic factor on saving of households became apparent when the sample was divided into urban and rural regions, as shown in the next chapter. The break-down of the sample into different areas and different geographic regions is needed because of differences in natural conditions, levels of development and the nature of household activities.

Appendix 5.1

Definitions of the variables:

Y:	Annual total income of household
W:	Assets of household, including housing, other physical and financial assets, minus total debts
SAVING:	Saving of household during one year, calculated by subtracting expenditure from the income of the household
AGE:	Age of household head
EDUY:	Education of household head, calculated by years of schooling
NCHILD:	Number of children: number of household members aged up to 17 years
NOLD:	Number of old people: number of household members over 64 years
D1:	Young dependency ratio, calculated as the ratio of the number of children by the number of people of working age
D2:	Old dependency ratio, calculated as the ratio of the number of old people by the number of people of working age
P1:	Young dependent ratio, calculated as the ratio of the number of children over the total number of household members
P2:	Old dependent ratio, calculated as the ratio of the number of old people by the total number of household members
MAR:	Dummy for marriage; takes the value 1 if the household head is married, and 0 if single
MALE:	Dummy for gender of household head; equals 1 if the household head is male, and 0 if female

Appendix 5.2

Summary statistics of variables

Variables	*Symbols*	*Mean*	*Standard deviation*
Income (thousand dong)	Y	7817	13263
Saving (thousand dong)	S	2129	12230
Assets (thousand dong)	W	9716	28779
Age of household heads	AGE	45.39	14.59
Education (years)	EDUY	6.40	4.35
Number of children	NCHILD	1.96	1.67
Number of old people	NOLD	0.27	0.56
Urban areas	URBAN	0.20	0.40
Regions (North)	NORTH	0.53	0.50
Gender (Male)	MALE	0.73	0.44
Marriage	MAR	0.81	0.39
Young dependency ratio (definition 1)	D1	0.92	0.84
Old dependency ratio (definition 1)	D2	0.12	0.30
Young dependency ratio (definition 2)	P1	0.36	0.25
Old dependency ratio (definition 2)	P2	0.07	0.18

Appendix 5.3

Saving, defined in the empirical study as the difference between total income and total expenditures, is

$$S = Tw_1 + t_2^m \, w_2 - nc_3 - mc_4 - x_m$$

or

$$S = Y - X$$

where

$$Y = Tw_1 + t_2^m \, w_2$$

and X is total expenditure or total consumption.

If the well known 'proportionality postulate' of the life cycle models that consumption, X, is a proportion of the total lifetime expected income resource or wealth, W, is adopted then we have

$$X = kW = k(A_0 + Y + Y_1^e)$$

where k is a function of the interest rate and the parameters of the utility function, A_0 is stock of assets (the accumulated saving) and Y^e is expected income in the future.

It is easy to see that

$$S = Y - X = Y - k(A_0 + Y + Y^e) = (1-k)Y - kA_0 - kY^e$$

Hence there is expected to be a negative relationship between assets (A_0) saving (S).

We also may use the assumption of the life cycle models:

$Y^e = \beta Y$

that means expected income is a fraction of current income enabling removal of the term for the expected income.

Appendix 5.4

Marginal effects of dependency ratios on saving ratios from related studies

Studies	*Countries*	*Young dependency ratio*	*Old dependency ratio*	*Type of data base*	*Notes on saving variables*
Leff (1969)	47 LDCs	-1.23	-0.44	Pooled cross section	Aggregate saving
Gupta (1971)	74 countries including LDCs	-1.84	-0.54	Pooled cross section	Aggregate saving
Leff (1971)	74 countries including LDCs	-0.97	-0.38	Pooled cross section	Aggregate saving
Feldstein (1980)	Industrial countries	-0.77	-1.21	Pooled cross section time series	Private saving
Modigliani and Sterling (1983)	Industrial countries	-0.2	-0.51	Cross section	Private saving
Horioka (1991)	Japan	-0.29	-1.03	Time series	Private saving
Weil (1994)	Industrial countries	-0.27	-0.5	Pooled cross section time series	Private saving
Ling and Peng (1996)	East Asia developing countries	-0.4	-0.6	Cross section	Saving
Heller and Symansky (1997)	Asian Tigers	-4.4	-1.54	Pooled cross section time series	Private saving

Chapter 6

Household saving by geographic regions and urban and rural areas

This chapter discusses the characteristics of different geographic regions and urban and rural areas in Vietnam, and analyses and compares the factors that influence household saving in these different regions and areas. These include income, assets, number of children, number of old people, and the other demographic factors such as age, education, gender and marital status of the household head. In particular, it is found that the effects of some factors on household saving are different from one region/area to another region/area.

The structure of the chapter is as follows. Section 6.1 points out some of the major differences in the characteristics of land use and history of land reform between the northern and southern regions. It also discusses different characteristics of labour activities in urban and rural areas and their relevance to saving behaviour. Section 6.2 presents the empirical analysis of household saving in urban and rural areas and discusses the results. Section 6.3 presents and discusses the results of the empirical analysis of household saving in northern and southern regions. Section 6.4 summarises the main conclusions of the chapter.

6.1 Background issues

Vietnam's territory stretches over three latitudes, with widely differing geographic and climatic conditions and 54 ethnic groups dispersed from north to south. Conditions are more favourable in the southern region because of a more moderate climate and richer soil enriched by the Mekong River. Vietnam has a history of division into two parts, the north and the south, and a long period of wars. The south was occupied by the United States for decades, while the north was led by the pro-socialist government of the Democratic Republic of Vietnam. As a result, there have been a number of differences in development of the household economies between the north and the south. While not emphasising the differences in culture and social aspects between the two regions, it is useful to highlight some features in these two regions as a background to the analysis undertaken in this chapter.

6.1.1 Land allocation and land reforms in northern and southern Vietnam

In the past, being strongly focused on agriculture, the household economy has been very closely related to ownership of land. After division of the country in 1954, land reform in the north was undertaken so that land previously concentrated in feudal tenures was given to peasants, transforming them from tenant farmers to independent farmers on their own land. After this transformation, small-scale agricultural production with low productivity was prevalent for the household economy. One of the most important characteristics of this type of production was that the labour of the family alone was utilised for production. This

led to a situation in which the area of cultivated land of households was proportional to the number of household members.

The policy of collectivisation was implemented in the north in the late 1950s aimed at improving productivity by gathering peasants into cooperatives in order to concentrate capital investment and apply achievements of technological progress. In a period of only three years, 1958-1960, around 85 per cent of households and 76 per cent of land was put into cooperatives (GSO 1971). By 1975, 95.6 per cent of the total number of households were participating in cooperatives (GSO 1980).

The establishment of cooperatives in this period broke the traditional model of household agricultural production in the north. The traditional household economy was restricted, and existed only within the 5 per cent of total land area of cooperatives that was given to family households as "supplementary land". As pointed out in Chapter 2, households often concentrated their productive resources in this area to satisfy their own consumption needs and to sell products in the market to obtain additional but very important income. According to Vu Tuan Anh and Tran Thi Van Anh (1997), the additional income from these areas of private land made up about 30 per cent of the total income of households on average (of the remainder, 60 per cent of income came from the cooperatives and 10 per cent came from other sources).

The failure of the cooperatives in the 1980s and the subsequent acceptance of an independent decision-making role for agricultural households in agriculture meant a return to the private land system that households had experienced before. The family farm system

that used to exist in the early 1950s was therefore restored, in conjunction with recent changes of land ownership arrangements. However, because of the limited availability of land in a typical farm, the less favourable natural conditions, and population pressure in the north, it has been difficult for households in the north to improve their incomes substantially.

In the former South Vietnam, land reform was commenced in 1970 by the government under Nguyen Van Thieu. It made considerable progress in transforming peasants into more capitalist style farmers. Previously, in the period 1954 to the late 1960s (under the Ngo Dinh Diem's government), the majority of the population had been tenant farmers and land was concentrated in the hands of large landowners (feudalists).[15] The move toward breaking this old system by the Nguyen Van Thieu's government was introduced with encouragement from the south's American advisers. The major features of this reform were a reduction in the area of land concentrated in the hands of land feudalists (to a maximum of 15 hectares); giving land to peasants (maximum 3 hectares). The objectives of this land reform were to transfer production in agriculture from the feudal style to the capitalist style and re-establishing small-scale household production (Lam Quang Huyen 1985).

In parallel with the land reform, a program called "Agricultural development" was implemented at this time, including imports of significant volumes of items such as chemical fertiliser, new seeds and agricultural equipment; and development of a trading system and banking system for agriculture. This program had a positive impact on

[15] By 1960, 45 per cent of cultivated lands were in the south in the hands of feudalists, involving 2.5 per cent of the population. Another 42.5 per cent of cultivated lands belonged to small feudalists, which involved 11.5 per cent of the population. As much as 75 per cent of land in the south of Vietnam was in the hands of 15 per cent of the population (Social Science Institute, 1990: 143).

agricultural development, raising the production and income levels of peasants and accelerating the process of transforming peasants to middle-class farmers. Peasant households gained experience in more modern ways of doing farm work.

The reunion of the country in the mid 1970s led to conversion of farms to cooperatives. As mentioned in Chapter 2, the number of cooperatives in the south was much lower than that in the north, and the established cooperatives also had existed for not very long when reforms commenced in the 1980s. With the demise of the cooperatives in the late 1980s, and given more favorable natural conditions, agriculture in the south was already at a higher level of development compared to the north. The middle-class farmers in the south have subsequently regained their position and role in agriculture as in the period before reunification.

In the transition back from collectivisation to a system of private land use in agriculture, the practice of allocating land marks another important difference between the north and the south. According to the Ministry of Agriculture and Food Industry (1995), land under long-term contracts has been more favoured by households in the south, and constitutes 50 per cent of the total cultivated areas while the corresponding share for the north is much smaller: 10 per cent. The difference of land type may contribute to the differences between farming households. A household that has long-term land use rights would usually consider investing more in land and would achieve higher productivity because of better understanding of the characteristics of the land.

In addition to natural-geographic conditions, another difference between the two regions is the population density. The northern region has a higher population density, largely concentrated in the Hong River Delta. The south has a larger cultivated area created by the Mekong River - the largest river in Southeast Asia, and has experienced more rapid population growth than the north. In addition, living standards of the north are only 60 per cent of those in the south (Vu Quang Viet 1996: 36). The south also receives significant remittances from around two million expatriate Vietnamese. Every year, expatriates send a total of more than $US 1 billion to Vietnam, mostly to the southern region, which provides an important source of capital for households to invest and thus increase production.

All of these factors - historical differences in land allocation, different types of land use rights, different natural and geographical conditions, different levels of agricultural development – result in differences of household income saving behaviour in the two parts of the country. The advantages of the south explain why this region has been the main source of rice exports and why households in the south have been richer than those in the north.

6.1.2 Some characteristics of household activities in rural and urban areas

As in many developing countries focused on agriculture, the production activities of households in rural areas of Vietnam often involve not only rice farming and agricultural production, but also many other economic activities. This is a by-product of the seasonal nature of agriculture. The results of a survey of agriculture and rural areas (General Survey of Vietnam (GSO 1993)) revealed the extent of diversification of labour use in rural areas.

Table 6.1 shows that although farming is the dominant activity, rural households are involved in many different types of production activity.

Table 6.1: Types of activities of households in rural areas

Types	*Number of households*	*Percentage*
Agriculture	9,528,896	79.6
Forestry	18,156	0.2
Fishery	229,909	1.9
Handicraft	160,370	1.3
Construction	31,914	0.3
Trade	384,272	3.2
Service	141,657	1.2
Other	1479,341	12.3
Total	11,974,515	100.0

Source: General Survey in Agriculture and Rural Areas (General Statistical Office, 1993)

In addition, even if a household specialises in farming, members of that household can be drawn into many other activities, especially in the off season. Off-season activities can include production of handicrafts, trading, and construction. The VLSS (1993) shows that 32 per cent of employed people have two jobs and 3 per cent have three jobs. The tendency to diversify employment activity continues to occur in rural areas, and constitutes one of the typical features of the life of rural households. According to Vu Quang Viet (1996: 33), the share of GDP contributed by agricultural activities in rural areas fell from 73.8 per cent in 1990 to 64.5 per cent in 1995, while that of construction and services in rural areas

increased rapidly, contributing nearly 6.7 per cent and 13.6 per cent of rural GDP in 1995, respectively.

In households in rural areas, the division of labour of the household is usually related to gender. While males tend to be involved more with market activities, sometimes involving jobs far from their home during the off season, females are likely to do more work at home. Similarly, young people tend to leave their home to find jobs while old people tend to do work at home or near home. The survey reflects this pattern, showing that economic migration of female labour is less than that of male labour. Male labour is 53.2 per cent of total labour that migrated for economic reasons (transferring due to job requirement, going to the "new economic zones", and going to find new jobs) compared to 46.9 per cent of female labour. In addition, the highest proportion of migrating population falls in the age group 20 to 29 years.

Children, especially those of poor households in rural areas, are an important source of labour. Children often assist, or sometimes replace, adult labour. The range of work in which they participate is quite wide in rural areas – including housework and many other types of labour in the cultivated fields. Agricultural activities account for most of children's work. The VLSS survey shows that 84.3 per cent of the total work that children are involved with is in various types of agriculture. The average work hours of children is around 29 hours per week.

In contrast, households in urban areas encompass mainly non-agricultural activities. Except for households where the household head works in the government (public) sector which

are considered households in the government sector, urban households participate in goods production and provision of services as private businesses. According to a survey for the capital city of Hanoi, 36 per cent of total number of households are engaged in goods production, 34 per cent in retail activity, and 30 per cent in other services (Vu and Tran 1997:180).[16] There were a small number of households carrying on private business in trading and other services before the 1980s, but these were a very minor part of the economy as a whole.

Another reason for the increasing number of households engaged in small private businesses is the significant number of people who have been retrenched from the government sector in urban areas. For example, from 1989 to 1993, 771,651 people were displaced from the government sector (Vietnam Labour Congress Reports 1993). The lump-sum allowances which the government gave them as compensation were insufficient to support their families for long, making it necessary for them to enter the previously unfamiliar retail trading and services market. In addition, because of the relatively low salaries in the government sector compared to the private sector, continuing government workers have tended to also seek additional work in the market in order to supplement their government income. Indeed, multiple jobs have been quite common among government employees. Thus the business activities of households in urban areas have also become quite diversified.

[16] A survey of the Institute of Economic Management in 1991 gave a slightly different figure: 23 per cent of all households were in production, and 77 per cent were in trading and other services (Pham Ngoc Pho, Le Thanh Hung, 1992).

Table 6.2: Ratios of rural to urban per capita GDP (per cent)

	1990	*1991*	*1992*	*1993*	*1994*	*1995*
Whole country	25	28	21	19	18	17
North	20	22	17	15	14	na
South	31	35	26	23	23	na

Source: Vu Quang Viet (1996: 38)

Another significant contrast between households in urban and rural areas is the different levels of income and development of the two areas. Table 6.2 shows the ratio of rural to urban per capita GDP in the north and the south and for Vietnam as a whole. This ratio declined gradually over the period 1990-94, implying that the absolute gap between rural and urban income increased in both the north and south, as well as for the country as a whole. By 1995, per capita rural GDP was only 17 per cent of the urban figure. In addition, the gap in per capita GDP between the two areas is increasing not only in terms of level but also in terms of growth rates. Per capita rural GDP increased at 2.7 per cent per annum in the period 1990-94, which was very slow compared to the corresponding urban figure of 8.8 per cent (Vu Quang Viet 1996: 33). Likewise, per capita urban GDP grew at 10.2 per cent per annum in 1995 while rural areas managed only 4.1 per cent.

Thus there are a number of aspects that distinguish the economic life of households in urban areas from that of households in rural areas. The differences lie in the nature of the work in which households participate: urban households are involved with non-agricultural activities while the households in rural areas are involved mostly in agricultural

production. This factor, together with the related gap in living standards between urban and rural areas, plays an important role in causing the differences in behaviour of urban and rural households in production, consumption and saving.

6.1.3 Issues for study on saving of different household groups

In the previous chapter the effects of the determinants of household saving were identified. The interesting question is then, if households are grouped by geographic regions or areas with different characteristics, are there any differences in the effect of the determinant variables on household saving across these regions/areas? In particular, we are interested in comparing the *mps* and the effect of saving determinants of different groups of households, and compare them with the results of some related studies in other developing countries. For these purposes, in the next sections, the sample is divided in two ways: first, into rural and urban areas; second, into two geographic regions, north and south.[17] We conduct a study employing an econometric model that uses the level variable for saving and the saving determinants applied in Chapter 5 (Model 1). One point worth noting is that the sample is not divided further to allow analysis of the differences between rural and urban households within each region (south and north) because of a truncation problem and a significant reduction of observations for each category.

[17] The analysis by groups of occupation is not a subject considered here but as pointed out in Kumcu (1989), the impact of different occupations on the saving behaviour may partially be picked up by the urban-rural breakdown of the sample.

To investigate whether the model is justified for separate estimation for the two groups, two tests are conducted. The first test is the F-test used to test the hypotheses of the equality of coefficients across groups (Crown, 1998). The second test is a test following a procedure used in Phan Dinh The (1999), which includes the region/area interactions with all the specified variables as additional regressors in model 1 to estimate for the entire sample. Then, the specified null hypothesis is tested by using the F-test to test for an equivalent null hypothesis that all interactive terms in the extended saving model jointly equal zero. The results of both these F-tests rejected the null hypotheses at the one per cent level of significance, suggesting that it will be justified to estimate the saving model for sub-samples of the different regions and different areas.[18] Thus, the comparative analyses can be carried out based on model 1 across the groups involved.

6.2 Household saving by rural and urban areas

The comparison of saving of households in rural and urban areas can be shown in terms of the differences in per capita saving, the *mps,* and the different impacts of the saving determinants. The difference of per capita saving of households in the two areas is depicted by Table 6.3. As shown in the table, rural households have lower income and saving levels than those of urban households. Rural households have mean per capita incomes of 1253 thousand dong compared to 3071 thousand dong for urban households, or a factor of 2.5

[18] The F-test which is used to test the hypothesis of homogeneity (the equality of regression equations) of different groups gives an F-statistic of 13.37 and 122.12 with 9 and 4570 degrees of freedom for areas and geographical regions respectively. This rejected the null hypothesis at the one per cent level of significance. The F-test which is used to test the null hypothesis that all interactive terms in the extended saving model jointly equal zero gives an F-statistic of 18.29 and 81.2 with 18 and 4570 degrees of freedom for areas and geographical regions respectively. The result also rejected the null hypothesis at the one per cent level of significance.

times less. In terms of mean per capita saving, rural households have 226 thousand dong compared to 1182 thousand dong in urban households, a factor of 5.2 times less. While there are big gaps between the two areas, the gap of per capita saving is much bigger than that of per capita income. This result seems to be consistent with the fact that households in rural areas are usually poorer than those in urban areas and thus have not much spare income for saving.

Table 6.3: Per capita income and saving of households in rural and urban areas (thousand dong)

	Urban households	*Rural households*	*Total sample*
Per capita income	3071	1253	1613
Per capita saving	1182	226	415

The econometric results obtained by 2SLS regressions using model 1 for the two areas are given in Table 6.4. In terms of important factors influencing household saving among rural households, income, education, number of children and number of old people, were found to have important impacts. The signs of the coefficients of the variables are consistent with the signs for the whole sample. While household saving is affected positively by increasing the income and education level, it is depressed by increasing the number of dependents, both young and old. For urban households, the coefficients of income, assets, and number of old people, were found to be significant. It is interesting that the number of children in urban households is found to have no impact on household saving while the number of old people has a positive impact. This is unlike the case of the whole sample where the number

of old people was found to be insignificant. This result is also contrary to the case of rural households where the number of old people was found to have a negative impact on household saving. The similarity of the saving pattern in the case of rural areas and the case of the whole sample is plausible, since the number of observations of rural households is dominant in our sample: 3679 observations for rural households compared with 909 observations for urban households.

Table 6.4: Saving of households in rural and urban areas

Variables	*Urban*		*Rural*	
	Coefficients	**t-ratios**	**Coefficients**	**t-ratios**
Y	0.73**	5.28	0.34**	2.13
W	-0.16**	-3.13	0.002	0.01
AGE	-0.02	-0.52	-0.002	-0.16
EDUY	0.07	0.92	0.08**	2.02
NCHILD	0.08	0.26	-0.21*	-1.92
NOLD	1.87**	2.14	-0.88**	-4.50
MAR	0.84	0.92	0.23	0.42
GEN	0.55	0.89	-0.62	-1.51
Constant	-2379.76*	-1.66	-442.52	-0.43
R-squared	0.72		0.56	
Observations	909		3679	

Note: The dependent variable is the saving level, in million dong. The asterisks * and ** denote significance at the 10 per cent and 5 per cent levels, respectively. Income (Y) and assets (W) are in million dong.

The regression results show a significant difference between the *mps* of households in the two areas: 0.73 in urban, which is nearly twice as much as 0.34 in urban. This finding is similar to that of many studies of developing countries such as Krishna and Raychaudhri (1982) and Gupta (1970) for India, Lluch *et al.* (1977) for Mexico, and Betancourt (1977) for Chile. For example, Gupta (1970) found that the *mps* of the urban sector in India is 0.48 while it is 0.25 in rural India, nearly one half of that of the urban sector. Krishna and Raychaudhri (1982) also found low levels of the *mps* for rural areas in India, ranging from 0.12 to 0.36. In Mexico, Lluch *et al.* also found that the *mps* of urban households is more than twice as much as that of rural households: 0.25 and 0.11 respectively.

The positive saving impact of the number of old people in urban households on household saving may be explained by the different income earning capacities of old people in different areas and possible significant precautionary saving and bequests made by old people. Old people in urban areas continue to have income that boosts the income stream of their families. Some of these old people are employed in the government sector and, when they retire, they continue to have an income source in the form of retirement allowances and social security assistance (this would reduce or make negative the cost of an old person in the model of Chapter 4). Others who are involved with market activities (retailers of goods and services) may contribute their experience and directly participate in the family businesses. The expertise and experience of old people are useful in the private sector, especially after the emergence of a free market. In these cases, old people may receive income from various sources and the income they earn may be far in excess of the costs of looking after them. As a result, old people may have a positive impact on household saving.

In addition, because households in urban areas have a higher income than rural households, they tend to have more opportunities to save to look after the health of old people. Precautionary saving for their health and welfare therefore is viable. Besides, if bequests of old people have a positive effect on household saving (old people save more to leave a bequest for the young generations), the relatively higher living standards of households in urban areas also allow bequests to be possible and thus households may be able to save more. This, combined with the higher income potential of the urban old, can make household saving in urban areas an increasing function of the number of aged dependents.

In contrast, as households in rural areas are involved mostly in agricultural activities, old people in those households can make at best a limited direct income contribution to the total income of their households. Thus the net income/cost effect of the rural old on household saving may be negative. Despite a possible positive effect of precautionary motive and bequests on household saving, the negative effect of the income/cost channel on household saving in rural areas may be so strong that it outweighs the positive effect of precautionary and bequest saving. As the living standards of rural areas are so low, it is difficult for households to allocate saving for precautionary and bequest reasons. Thus the total effect of the number of old people on household saving in rural areas may be negative as in the results of Table 6.4.

In summary, per capita saving of rural households is very low compared with that of urban households. The determinants of household saving can have quite different effects on saving in urban and rural households. The contrasts are found in the significant gap of the

mps between the two areas and in the significant factors of household saving. While education is likely to be an important factor in increasing household saving in the rural sector, it may not be so for the urban sector. An increasing number of old people may make households dissave significantly in rural areas, but there is no evidence of a negative impact in urban households.

6.3 Household saving by geographic regions

As with the case of urban and rural households, the comparison of household saving between the north and the south of the country is undertaken using both the per capita saving and the analysis of saving determinants in the saving level model. In correspondence with the higher per capita income level of households in the south compared to those in the north (mean values of per capita income of households in the south are 1975 thousand dong compared to 1297 thousand dong in the north, or a factor of around 1.5 times), per capita saving of southern households is also higher than that of northern households: 496 and 344 thousand dong, respectively (Table 6.5). However, the gap of per capita saving of the two regions is not as high as in the urban/rural case, but about the same as the gap of per capita income of south/north: 1.4 times.

The econometric results from the 2SLS regressions for the two geographic regions are reported in Table 6.6. The results show that for the group of households in the north the variables of income, education, number of children, marital status and gender of household head are found to be important. For the southern households, only income, assets and number of children appeared to be important. The *mps* of households in the north is lower

than that of those in the south, and the difference is considerable: 0.52 compared to 0.62. Taking the fact that per capita income of the households in the south is more than that in the north in Table 6.5, this result shows that the regional group with a higher income level has higher *mps*.

Table 6.5: Per capita income and saving of households in the north and in the south (thousand dong)

	Northern households	*Southern households*	*Total sample*
Per capita income	1297	1975	1613
Per capita saving	344	496	415

The effect of the number of children on household saving is found to be almost the same for households in the two regions. The impact is negative and, as in the case of the whole sample, the marginal effect of an extra child is a fall in saving of approximately 0.2 million dong. The number of old people in the households seems to have no effect on saving in either region. The signs and the magnitudes of the coefficients as well as the significance levels and the signs of the intercept terms were consistent with those for the whole sample. In particular, the coefficient of assets (W) for the south is -0.12, close to the corresponding coefficient in the various saving models in the previous chapter (Tables 5.1 and 5.2).

Similarly, while the marginal effects of education, marital status and gender of household heads differ across the north and south, they are close to those found for the whole sample.

Table 6.6: Saving of households by geographic regions

Variables	*Northern*		*Southern*	
	Coefficients	**t-ratios**	**Coefficients**	**t-ratios**
Y	0.52**	4.34	0.62**	7.12
W	-0.14	-1.39	-0.12**	-2.47
AGE	0.004	0.27	0.0001	0.003
EDUY	0.14**	2.30	0.09	1.15
NCHILD	-0.21**	-2.63	-0.22*	-1.90
NOLD	-0.30	-1.00	0.08	0.19
MAR	0.95**	2.20	0.56	0.91
GEN	-0.85**	-2.12	-0.41	-0.79
Constant	-1475.67**	-2.05	-2160.16**	-2.00
R-squared	0.73		0.72	
Observations	2446		2142	

Note: The dependent variable is the saving level, in million dong. The asterisks * and ** denote the significance levels at the 10 per cent and 5 per cent, respectively. Income (Y) and assets (W) are in million dong.

Except for the *mps* and the marginal effect of the number of children, it is hard to compare the marginal effects of other factors on household saving across these two regions because the coefficients of the other variables were significant in one regression but not in the other. However, it is possible to draw a conclusion about the impact of the saving determinants in a particular group as well as for the whole sample. For example, with the whole sample, education and marriage were found to be important in inducing households to save more, while the coefficient for gender implies that households with female heads save more. The results also suggest that the effect of these factors found in the case of the whole sample may be mainly accounted for by households in the northern region. Conversely, assets were found to have a negative effect on household saving in the south, and to have a more dominant role than those of northern households in contributing to the effect of this factor for the whole sample. This result and that of the previous sub-section suggest that the assets factor has a more pronounced effect on saving in households that are relatively well off. In particular, assets were found to have an impact on saving in urban areas and in the south which has higher living standards than rural households and households in the north.

Overall, this sub-section shows that if the sample of households is divided by geographical regions, the southern region households, that have higher mean per capita income than the northern households, also have a higher *mps*. While the effect of assets, education, marital status and gender differ, the impact of the number of children on household saving is much

the same across regions and is likely to induce households to dissave, as was found for the whole sample.

6.3 Conclusion

Because of the many different characteristics of northern/southern regions and rural/urban areas, it is expected that there might be different saving behaviour across various groups of households. The empirical results discussed in this chapter have confirmed this conjecture. As with the findings of the previous chapter, income was again found to be crucial in determining household saving. In terms of the *mps*, the pattern of saving supports the suggestion that households in an area/region with higher incomes (southern households and/or urban households) would have higher *mps* than households in an area/region with lower incomes (northern households and/or rural households).

The results also show that it is not easy to compare the marginal effect of the determinants of saving in the contrasted groups if some of them are found to be significant in one regression but insignificant in the other. The effect of the number of children in households is found to be important in all regions. In addition, an extra child reduces household saving by nearly the same extent in the north and the south. In the case of urban vs. rural, the negative impact of children on saving only applies to rural households. The number of old people was found to have a varying effect on household saving, depending on the location of the household. In urban areas, an increase in the number of old people has a positive effect on saving, while in rural areas, it has a negative effect. Asset level was found to be important for the higher income group (urban and/or southern households), while education

was found to be important for lower income groups (northern and rural households) to save. The marital status and the gender of household heads in northern households have a stronger influence on saving than in southern households. The effects of these factors (the signs of the coefficients) on household saving were found to be consistent with the ones for the whole sample.

As is well known, there is a gap between the total saving of a household and its saving in financial institutions. This gap reflects the forms in which the household keeps its saving. In developing countries the gap may be very significant because of the underdevelopment of financial institutions and because of greater uncertainty. It is therefore important to analyse the factors that have an impact on how households in a developing country like Vietnam organise their saving. This issue is the subject of the next chapter.

Appendix 6.1

Characteristics of variables by regions

Variables	*North*	*South*
Income (thousand dong)	6201.1	11335.2
Assets (thousand dong)	6114.5	14676.9
Age of household head (Years)	43.8	47.2
Education (Years of schooling)	7.4	5.2
Number of children	1.9	2.0
Number of old people	0.3	0.3
Marital status	0.9	0.8
Gender	0.8	0.7

Appendix 6.2

Characteristics of variables by regions

Variables	*Rural*	*Urban*
Income (thousand dong)	7187.9	21697.3
Assets (thousand dong)	7640.1	33068.6
Age of household head (Years)	45.1	48.2
Education (Years of schooling)	6.2	8.5
Number of children	2.0	1.4
Number of old people	0.3	0.3
Marital status	0.8	0.8
Gender	0.8	0.6

Chapter 7

A study of wealth of households

7.1 Introduction

In the previous chapters, we have been dealing with the saving level of households. An interesting question which arises is whether the factors determining the household saving level play any role in determining the amount and composition of household wealth. How do households hold their wealth? Conducting a study on wealth is important in the context of this thesis because the wealth of households is essentially accumulated saving along their life cycle. An investigation of wealth will provide a more complete picture of the saving behaviour of households.

The structure of the wealth of households is a complex issue. Households can choose to hold their wealth in different ways, depending on risk aversion, expected real rates of return and other factors such as liquidity constraints[19] and the stability of the macroeconomic environment. In industrial countries, households face a choice set of many types of portfolio investment. In agricultural developing countries, where the financial and capital markets are less developed, and liquidity constraints and uncertainty play a larger role, households face a smaller set of saving choices.

[19] Liquidity constraints usually means borrowing constraints and credit rationing but may also be considered as differential lending and borrowing rates (see Hayashi 1987).

This chapter attempts to elucidate some aspects of household wealth for the case of Vietnam. In particular, we are interested in two aspects of household wealth: the relationship between the level of wealth and its determinants, and the structure of household wealth. The organisation of the chapter is as follows. Section 7.2 briefly discusses the relevant literature on wealth and wealth composition. Section 7.3 reports and discusses the results of an econometric study on the relationship of the saving determinants and the amount of wealth. Section 7.4 describes the structure of household asset holdings. Section 7.5 uses a multinomial logit model to conduct an econometric study on the structure of asset holdings and provides the results. Section 7.6 summarises the findings of the chapter.

7.2 Background issues

The composition of individuals' asset portfolios has long received attention in the literature, for example, Samuelson (1969), Merton (1969) and Hakansson (1969, 1970). A basic model of individual portfolio choice assumes individuals maximise expected utility in a world of perfect information, perfect capital markets and no taxes or transaction costs. In the case of constant-relative-risk-aversion utility of individuals, the optimal asset combination is that in which the proportion of wealth invested in each type of asset is independent of total wealth. When the analysis is extended to a lifecycle framework with

an additively separable intertemporal utility function, the asset proportions are also independent of age.

However, when the assumptions of the basic models are relaxed, it becomes difficult to derive any firm result to predict the structure of asset portfolios of individuals. In the real world it seems unlikely that asset proportions will show a stable pattern across the wealth and age of individuals. Since portfolio theory is ambiguous about the pattern of wealth holdings in a world of imperfect capital markets, imperfect information and non-zero transaction costs, the analysis of portfolio behaviour has frequently relied on empirical studies.

The scope of empirical studies of wealth and wealth composition is quite extensive. For example, Uhler and Cragg (1971) investigated the effects of income, non-human wealth and some demographic characteristics of households on the way in which households structure their holdings of financial assets; Feldstein (1976) studied the impact of the tax structure on asset holdings; Shorrocks (1982) studied the separate influences of age, gender and wealth on the portfolio composition of wealth; Paxson (1990) examined how borrowing ceilings in the personal loan market affect the portfolio choice of consumers; Blau and Graham (1990) considered the impact of race differences on the magnitude and composition of wealth; Giraldi and Hamaui (1993) studied non-marketable assets and household portfolio choices among illiquid components of wealth; Treas (1993) considered the effect of marriage on types of bank accounts (joint and separate accounts); and Hoynes and McFadden (1994)

focused on the impact of demographics on housing and non-housing wealth. Each of these studies concentrated on an aspect of wealth holdings of the household or the individual, depending on the data available. However, the data on assets are often poorer than those on other important economic variables due to limited asset coverage and suspect valuations.

As in many agricultural developing countries, households in Vietnam face a relatively high level of uncertainty and liquidity constraints. The economic crisis in the 1980s with high inflation and the breakdown of the system of People's Credit Cooperatives in the late 1980s and earlier 1990s also created some loss of confidence in the financial and banking system. As a result, assets of households played a more important role in Vietnam than in the non-agricultural countries without inflation and economic crises. The phenomena of "buffer stocks" saving (Deaton, 1991), and "dollarisation" (Canto and Nickelsburg 1987; Calvo and Vegh 1992; Ngo 1998) in developing countries were well observed in the case of Vietnam. Deaton argues that, in developing countries, with liquidity constraints and when labour income is independently and identically distributed over time, assets act like a buffer stock, protecting consumption against bad draws of income. Ngo has pointed out that, in developing countries (especially some Latin American countries), over the period characterised by high inflation, and a wide magnitude of exchange rate fluctuation and rapid depreciation, domestic currencies were replaced mostly by US dollars. The degree of dollarisation seems to be related to macroeconomic instability as well as other institutional factors such as the regulatory framework and the development stage of the financial system in these countries.

As a consequence of inflation and the underdevelopment of the financial and banking system, households in Vietnam keep their wealth in different forms depending on the purpose and accessibility: financial assets for their yields; gold and some strong currencies to hedge against high inflation and to use as a medium of exchange; cash for offsetting borrowing constraints and due to reduced accessibility to the banking system; houses and household durables for improving living conditions and also for possible bequest motives,[20] and so on. In the following subsections, we will conduct studies on the level of wealth and the structure of wealth of households in Vietnam.

7.3 An econometric study on the level of wealth

In this study, we use an econometric model to examine the relationship between Vietnamese households' wealth holdings and the saving determinants specified in the previous chapters. We adopt a model similar to the ones used in Blau and Graham (1990) and Starr-McCluer (1996) for households in the US. The econometric model can be expressed as follows:

$$W_i = \gamma_0 + \gamma_1 Y_i + \gamma_2 Z_i + e_i$$

where W_i is wealth or net worth of household i ; Y_i is the household's permanent income; Z_i is a vector of socio-demographic characteristics of households; γ_i are the coefficients to be estimated; and e_i is a normally distributed error term.

[20] Purchasing houses may have a financial aspect such as for renting but this aspect is not popular in Vietnam.

The data are taken from the VLSS (1993), the source used in the previous chapters. The variable of net worth of household is defined as the total assets (both financial and non-financial assets) less the debts of households. This means trading stock and business capital, animals and other forms of a household capital are all included in this variable. Other explanatory variables of the model and their characteristics are provided in the Appendix to the Chapter.

In addition to the above model that uses the usual variable net wealth to represent assets of households, an additional model of wealth holding that uses non-estate net worth is also used to analyse the effect of the determinants on wealth of households. The non-estate net worth is defined as net worth excluding equity in houses. Some reasons for the use of this variable are that: 1) pointed out in Starr-McCluer (1996), many variables can be used as a proxy for wealth of households such as liquid assets (cash, money deposits, check accounts, saving accounts, etc.) of financial assets (liquid assets plus stocks, bonds, mutual funds, insurance, etc.); 2) it is believed that houses are sometimes valued quite arbitrarily and such values may be highly inaccurate because the housing market was relatively underdeveloped at the time the survey was conducted. Using such additional measures of wealth an additional model using this variable of wealth helped provide additional information on the effect of the determinants on asset holdings of households.

In the analysis of the relationship between wealth and income, using current income may distort their longer-run relationships. To deal with this problem, permanent income (the

lifetime income) or its proxy may be used. We use the approach of Blau and Graham (1990) to estimate permanent income for households[21]. According to the permanent income hypothesis and the LCH, we expect that permanent income will have positive signs in the wealth regression. Based on the results of the previous chapters, we also expect the coefficients of the variables of education of household head, number of old people, marital status and urban to be positive, and the coefficient of the variables of gender and northern region to be negative. That means the general results from the analysis of saving flows in Chapter 5 should be similar to those for saving stocks.

Table 7.4 reports the results of the OLS regressions of wealth on the saving determinants with two different measures of household wealth: the total net worth and the non-estate net worth. The reported t-ratios in the table were based on robust standard errors after correcting for the heteroscedasticity problem.

[21] Permanent income is estimated on the basis of the earning function of a household. The explanatory variables in the earning function include age and age squared of the head and spouse, education of the head and spouse, household size, number of children, experience and experience squared of the head, dummy variables of marital status, urban/rural, north/south. Permanent income was set equal to predicted income evaluated at the age of the head equal to 45. The wife's age was set equal to what her age would be when her husband was 45.

Table 7.1: Estimation results for household wealth

Variables	*Log of net worth*	*t-ratio*	*Log or non-estate net worth*	*t-ratio*
Log of PY	0.26**	6.29	0.24**	5.39
AGE	0.04**	16.87	0.04**	14.29
EDUY	0.08**	16.89	0.08**	12.53
NCHILD	0.02	1.22	0.02	1.45
NOLD	0.26**	6.35	0.26**	5.08
NORTH	-0.27**	-6.46	-0.38**	-7.27
URBAN	0.48**	7.03	0.39**	5.46
MALE	-0.07	-1.13	-0.06	0.91
MARRIED	0.45**	5.61	0.52**	6.08
CONST	3.39**	4.83	3.28**	7.11
R^2	0.26		0.19	
Number of observations	3871		3518	

Note: Permanent income (PY) and wealth (net worth and non-estate net worth) are in million dong. Asterisks *, ** denote the 10 and 5 per cent significance level, respectively.

While the coefficients of income, age, education, number of old people, regions, urban/rural areas, marital status and constant term were found to be significant at the 5 per cent level in both regressions, the coefficients of number of children and gender appeared to be insignificant in both regressions. There were no changes in terms of the significance and the signs of the variables between the regressions of net worth and non-estate net worth implying a consistency between the two models. It is of interest to note that, the models using the variables of level of net worth, non-estate net-worth and permanent income (not

the log of the variables as in Table 7.1) produced the same results in terms of the significance levels and the signs of the independent variables. However such models gave lower values of R squared.

As expected, the estimation results show that net worth level of households was positively associated with the permanent income of households. While the age of the household head was found unimportant in the saving level regressions in the previous chapters, the age of the household head in the wealth regressions was found to be positively associated with the household's net worth. This result is consistent with the fact that households accumulate saving over long periods. Thus the higher the age of the household head, the longer the period of accumulation, and the larger the amount of wealth. In addition, for extended households, wealth is also accumulated by all members of households throughout the life of the households. The wealth created by young members may offset a possible run-down of wealth caused by the old. Besides, with the additional impact of the possibly strong bequest and precautionary saving[22] motives in Vietnam, which are difficult to test econometrically at this stage, it is unlikely that accumulated saving is run down when household heads get older.

The results found in this study support our expectations about the signs of the coefficients

[22] The standard definition of precautionary saving is that the combination of a positive third derivative of the utility function and the uncertainty about future income reduces current consumption and thus raises saving. This saving is precautionary saving. However, in the broader meaning in the literature, precautionary saving may consist of many components: the precautionary saving which protects against possible future income downturns, the saving caused by liquidity constraints, and in some cases, the saving determined by the rules of thumb (Shefrin and Thaler 1988). In this context, precautionary saving has a meaning associated with the uncertainty about future income and the possible instability of the macroeconomic environment.

of other independent variables. The positive association between wealth and education of household heads is consistent with the positive relationship between saving and this variable found in the previous chapters. It seems quite reasonable that once education has a positive impact on income and saving, it eventually will have a positive impact on the accumulated saving of households. The positive relationship between wealth and education could also suggest that there is a possibility of the causality flowing from wealth to education. Household wealth may be an indicator that the household (or the household from which wealth was transmitted via bequest and inter-generational transfers) was able to bear the opportunity cost of education of the current household head.

In contrast to the strong evidence of a positive impact of the number of old people on household wealth, there is no evidence that the number of children causes wealth holdings of households to decline. This result may be explained by the fact that children may cause saving of households to decline when they are small. However, as children grow up, children begin earning income. This income may eventually outweigh the costs borne by households in raising them in their early years. As a result, the total effect of children on accumulated saving may be no longer negative. To an extent, the positive signs of the coefficient of these variables support this argument. Also, the coefficient of the variable of gender (MALE) was found to be insignificant implying that the factor of gender does not have any significant effect on the level of wealth of households.

The signs of the dummy variables of north/south, urban/rural and marital status also support our expectations. Except for income, being in the different areas and being married

are likely to affect substantially and positively the level of wealth. The magnitude of the coefficient of the variable URBAN and the variable MARRIED are 0.48 and 0.52, respectively - largest among those of the other independent variables in two regressions. The results of this study conform to the higher average of the income and saving levels of the southern region and the urban areas compared to the northern region and rural areas, respectively.

In general, the results of the econometric model support our hypotheses about the role of the saving determinants on the wealth level of households. Of the factors affecting the wealth level, income, urban/rural areas and geographic regions were found to be very important. In the following subsections, we will show that they are also important determinant of the structure of the wealth holdings of households.

7.4 The structure of asset holdings of households

In this section, we focus on the composition of Vietnamese household asset holdings. As mentioned before, households in Vietnam hold their assets in many types. Because of the many different assets, we will group them into five (and subsequently four) main types. Then the patterns of households' asset holdings of these types will be considered and compared for different cases of the whole sample, different areas (urban/rural), different geographic regions and different groups (rich, middle and poor) of households.

Table 7.2: Asset diversification level of households

Diversification level	*Frequency*	*Percentage*	*Cumulative percentage*
No holdings reported (except for houses)	2377	50.62	50.62
One type	1359	28.94	79.56
Two types	728	15.50	95.06
Three types	194	4.13	99.19
Four types or more	38	0.81	100.00
Total	4696	100.00	

At first, let us look at the level of asset diversification. In the questionnaire of the survey, households were asked to answer the question of whether they possessed the following types of assets (or "forms of saving" in the questionnaire): deposits in a state bank, deposits in other specialised banks, deposits in credit cooperatives, bonds, shares and tontine; cash, US dollars, gold, buildings and houses, household durable goods, paddy and rice, and other. Thus they could hold no assets, one type of asset, two types of assets and so on. They were also asked to provide the value of each type of asset held. In general, each household possesses a house, so the household holds at least one type of asset. But with the focus on other types of assets of households, the housing asset was put temporarily aside. The household's level of asset diversification is shown in Table 7.2. The table indicates that the number of households that held a given number of types of assets is decreasing along with the increase of the household's level of diversification (the number of asset types held). Thus the frequency of holding more types of assets moves in the opposite direction to the level of asset diversification. In particular, only 4.13 per cent and 0.81 per cent of the total

number of households held three and four (or more) types of asset holdings, respectively. The number of households holding one or more types of assets consisted of only about 20 per cent (the last column of Table 7.3) of the total number of households holding assets.

For the purpose of analysis, some types of asset holdings were grouped because they are the same in nature. In particular, gold and US dollars were put in one type because both of them customarily have the same main functions for households in Vietnam: as a means of maintaining the real value of assets and as a medium of exchange (the unit of gold as "cay" (tael) and "chi" (one tenth of tael), which are different in weight from the standard unit of ounce and pound in the international gold market).[23] The reality of the gold and dollar markets in Vietnam shows that changes in prices of gold and US dollars are almost the same. In fact, these two types of assets are very popular in the black market and are used interchangeably by households. The "Bank deposits" group in this figure includes money deposits in all banks and financial institutions.

As discussed before, because the estimated value of house and buildings is not accurate, the housing value is not counted in the total assets of households. Land value therefore also is not considered. The value of groups consisting of shares and tontine, durables, and bonds are quite small (3.43 per cent, 1.83 and 0.30 per cent of the total value of assets, respectively). Thus, they can be put into the "Other" type. By grouping these items, we are able to compare the asset holdings of households in financial institutions and in other asset types (or forms of household saving) that are of concern.

[23] One Vietnamese tael of gold equals to 37.3 grams, or approximately to 1.316 ounce of gold.

The structure of assets held by households is described in Figure 7.1. The figure shows that households in Vietnam hold their assets most in gold and dollars. The percentage of per household asset value held in this form is 50.33 per cent. Keeping assets in banks and financial institutes, cash and paddy are the next popular forms of saving with the values of 26.3 per cent, 10.6 per cent and 3.20 per cent, respectively. It is useful to note again that the type "Other" includes all other non-estate asset types that have a lower percentage of asset value compared with paddy and rice.

Figures 7.2 and 7.3 describe the asset holdings of households in urban and rural areas and northern and southern regions, respectively. Overall, households in all the areas and regions exhibit a pattern similar to the whole sample with frequency of holding assets in descending order: gold and dollar, bank deposits, cash and paddy (except for the case of urban areas, where no paddy is held due to non agricultural activities of households in these areas). While households in urban areas keep a lower proportion of their assets in cash compared to that of households in rural areas, they keep higher proportions of assets in gold and dollars and in financial institutions. In the case of geographic regions, households in the south hold more assets in gold and dollars but less in paddy and cash than in the north.

Figure 7.1: Percentage of household asset (by value) in each type

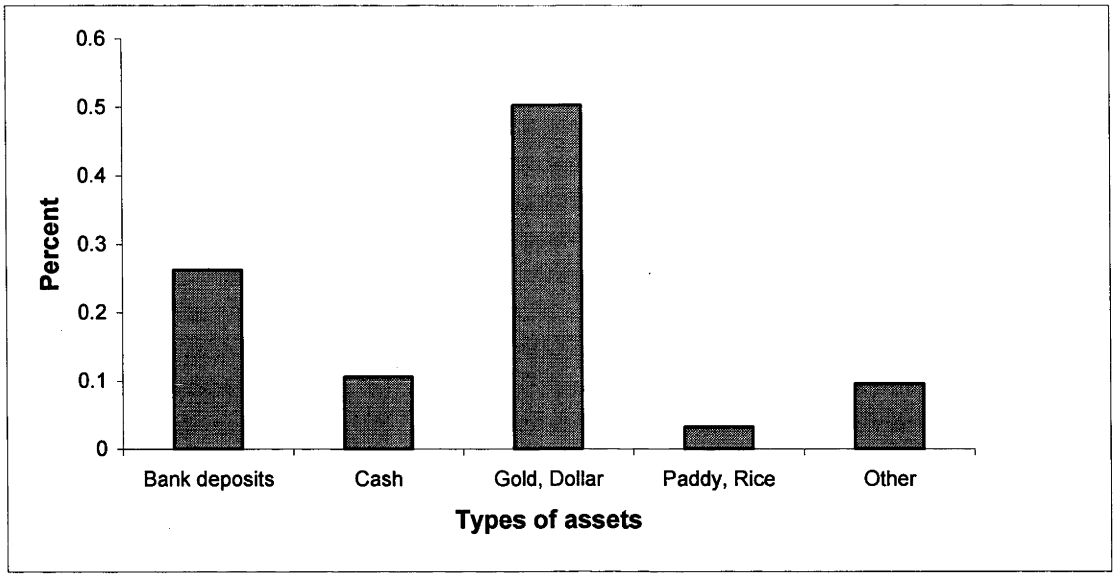


Figure 7.2 Percentage of household asset (by value) in each type in urban and rural areas

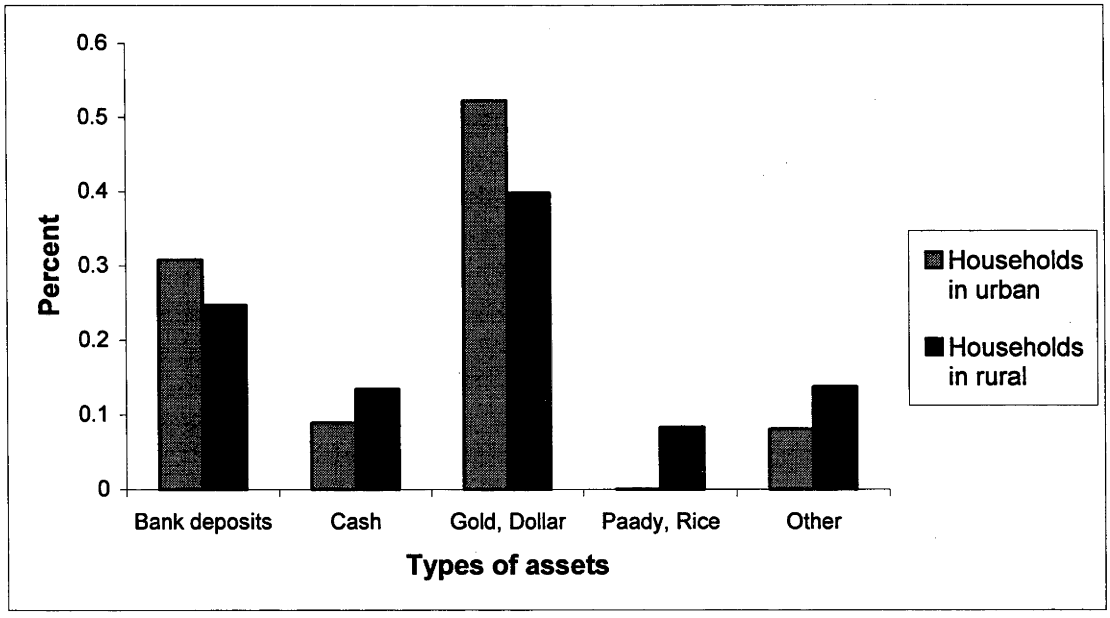
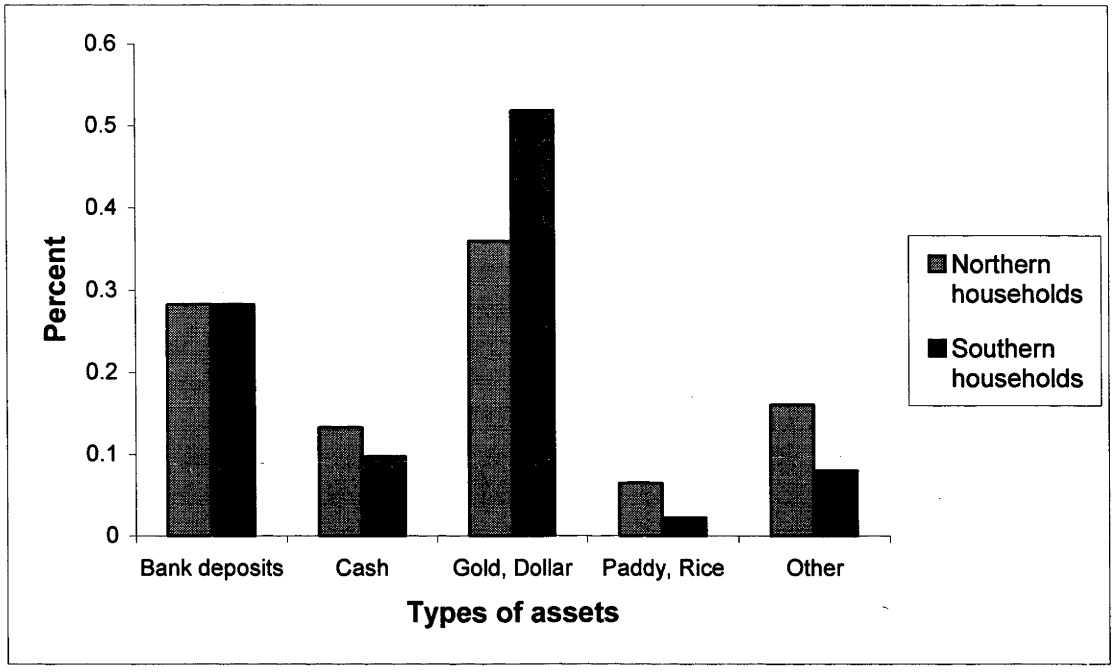


Figure 7.3: Percentage of household asset (by value) in each type in northern and southern regions

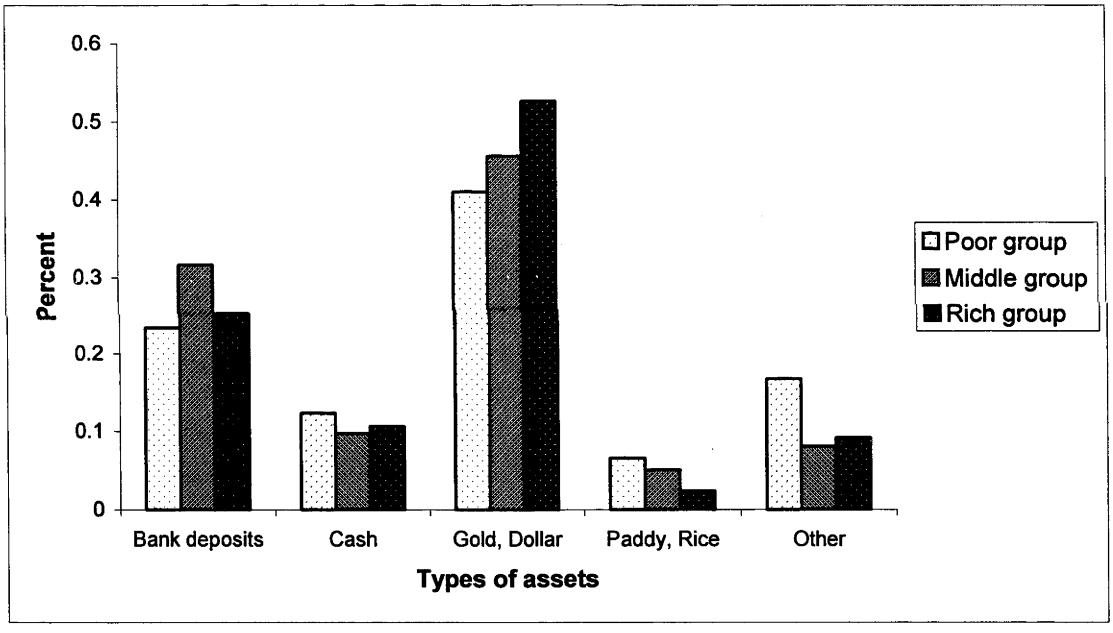


The patterns in Figures 7.2 and 7.3 suggest that the groups of higher income (and hence higher wealth) households (in urban areas and in the south), may hold assets more in gold and dollars and less in cash and paddy than the groups with lower income/wealth (in rural areas and in the north). To see whether this is the case, we compare the structure of asset holdings of three groups of households, poor, middle and rich, based on per capita net worth level.[24] Figure 7.4 illustrates asset holding of the three household groups of poor,

[24] The criteria to divide households into these three groups is based on the value of net worth per capita of households and ranking this value in an order from the lowest to the highest. Then the whole sample is divided into three groups and the poor group contains the households with the lowest third of the sample in terms of per capita net worth, the middle group contains the second lowest net worth third, and the rich group contains the remaining households.

middle and rich. The figure shows that there is a clear pattern of asset holdings in gold and dollars increasing with respect to the per capita wealth level, paddy and rice decreasing with respect to the per capita wealth level) but no such clear relationship for the asset types of bank deposits and cash.

Figure 7.4: Asset holdings of three groups of households: poor, middle and rich



The result that households keep their assets most in the form of gold and dollars in all areas and regions suggests that households in Vietnam still have considerable concern about inflation. This would not be surprising given that the VLSS survey was conducted in 1992-1993, a period after the high inflation in the late 1980s, in which inflation exceeded 500

per cent per year. The hyper-inflation was a painful experience for many households because of the sharp fall in the real value of cash and deposits in the banks and financial institutions.

The higher proportions of assets in cash and paddy of households in rural areas compared to that in urban areas are also consistent with the underdevelopment of banking and the financial system and the lower level of income and development in rural areas. It is well known that in less-developed countries, households in rural areas usually have a disadvantage compared with the households in urban areas in terms of accessibility to the services of financial institutions. A smaller number of branches of such institutions are located in rural areas compared with urban areas. The smaller number of branches in rural areas makes transaction costs higher (longer distance to branches, more time spent, more costs and so on) for rural households. Moreover, being poor and dependent much on paddy and rice, rural households often are concerned most about adequate supply for their own consumption. All of these factors make it more important for rural households to hold more of their assets in cash and paddy and rice.

In sum, while households may hold their assets in many forms, the level of asset diversification exhibits a decreasing frequency of households. On average, households in Vietnam keep their non-estate assets most in the following order: gold and dollars, bank deposits, cash, paddy and rice. Compared with rural areas, urban households keep a higher proportion of assets in gold and dollars, and in banks but keep smaller proportions in cash, paddy and rice. Households in the south keep a higher proportion of assets in gold and

dollars but keep a smaller proportion of assets in cash and paddy and rice. Households in richer groups hold assets relatively more in gold and dollars and relatively less in paddy and rice. In what follows, we will investigate further the structure of asset holdings of households using an econometric analysis.

7.5 An econometric analysis on the structure of asset holdings

In this section a multinomial logit (MNL) model is exploited to examine the relationship of the saving determinants to the way households choose to hold their assets.[25] For the purpose of the MNL model, a household is assumed to prefer a particular asset type most if it holds the highest proportion of its total asset value in this type. Consistent with the four types specified in the previous subsection, there are four alternatives for households to consider: holding assets most in gold and dollars; holding assets most in bank deposits; holding assets most in cash; and holding assets most in paddy and rice. The observations where households hold most assets in the type "Other" are excluded. The frequency and percentage of the most preferred types of assets is given in Appendix 7.3. As a household can choose only one of the alternative types for holding assets most, the choice by households is mutually exclusive. Thus it is appropriate to apply the MNL model.

In the literature, the MNL model is quite popular among the class of the limited-dependent-variable models. It has been used in a number of studies, for example, Their (1969), Cragg and Uhler (1970), Schmidt and Strauss (1974), Treas (1993).

[25] Since many households, especially in rural areas, do not hold their assets in all the types that are specified in the previous section, it is found that the ordered data for using an ordered logit model or an ordered probit model to conduct an econometric analysis is not sufficient.

7.5.1 Multinomial logit model

Suppose a households i faced with J holding asset choices, its utility of choice j is

$$U_{ij} = \beta_j' x_{ij} + \varepsilon_{ij} \quad (1)$$

where x_{ij} is the vector of exogenous variables of household characteristics explaining holding asset choice; β_j is a vector of coefficients pertaining to choice j; and ε_{ij} is the disturbance term. If choice j is made by the household and U_{ij} is the maximum among the J utilities, then the statistical model is driven by the probability that choice j is made, which is

$$\text{Prob}(U_{ij} > U_{ik}) \quad \text{for all other } k \text{ different from } j \quad (2)$$

Let y be a dependent variable indicating the choice j is made ($j = 1, \ldots, J$), and if the J disturbances are independently and identically distributed with Weibull distribution then, as shown in McFadden (1973), Maddala (1983) and Greene (1993), the multinomial logit specification of the utility-maximising household probability of choosing alternative j, P_{ij}, can be expressed as[26]

[26] In fact, McFadden (1974) suggests a conditional logit model which is slightly different from the MNL model. The main difference between the McFadden conditional logit model and the MNL model is that the McFadden model considers the effects of choice characteristics on the determinants of choice probabilities as well, while the MNL model considered here makes the choice probabilities dependent on household characteristics only.

$$P_{ij} = P(y = j) = \frac{e^{\beta' j x_i}}{\sum_{k=1}^{J} e^{\beta' k x_i}} \quad (3)$$

Because of the problem of indeterminacy in the model (the solutions to the estimated βs may allow the same probabilities for different outcomes) it is necessary to impose some constraints on the β vector to obtain identification. The most simple is[27]

$$\beta_1 = 0 \quad (4)$$

Thus

$$P_{i1} = P(y = 1) = \frac{1}{1 + \sum_{k=2}^{J} e^{\beta' k x_i}} \quad (5)$$

and

$$P_{ij} = P(y = j) = \frac{e^{\beta' j x_i}}{1 + \sum_{k=2}^{J} e^{\beta' k x_i}} \quad (6)$$

The log-odds ratio - the logarithm of the ratio of two probabilities of any two choices is

$$\ln\left[\frac{P_{ij}}{P_{ik}}\right] = (\beta_j - \beta_k)' x_i \quad (7)$$

[27] See Maddala (1983) and Green (1993) for details

The partial derivatives of the logarithms of the odds in favour of choice j over the choice k is

$$\frac{\partial \ln[P_{ij} / P_{ik})}{\partial x_i} = \beta_j - \beta_k \tag{8}$$

Thus, as x increases, the likelihood of a household choosing alternative j rather than alternative k increases if $\beta_j > \beta_k$. If $\beta_j < \beta_k$ then an increase in x will reduce P_{ij} relative to P_{ik}.

Using constraint (4)

$$\ln\left[\frac{P_{ij}}{P_{i1}}\right] = \beta_j' x_i \tag{9}$$

The interpretation of the coefficients β_j in (9), which is the partial derivative of the log of the odds of alternative j over the first alternative, is quite straightforward. Thus, it is convenient to use the MNL model to analyse the effects of the independent variables on the probabilities of choices from the signs and the significance level of the coefficients of the variables.

The MNL model is also attractive because the probability function is of a simple form and the vector β can be estimable using standard maximum likelihood techniques. Using the MNL model also has the advantage of independence from irrelevant alternatives (IIA). The

IIA property of the model states that the ratio of the probabilities for any two alternatives (odds ratio) is independent of any other alternatives. Also, the MNL can help to compare the effects of any variable on the relative odds of any two alternatives without considering the remaining alternatives.

Based on the examination of the descriptive analysis in subsection 7.4, it is expected that wealth, income, urban/rural areas, geographic regions should be among the important factors that affect the asset choices of households. Higher levels of wealth and income are expected to associate positively with choosing gold and dollars over other form of asset holdings. Being in urban households also is expected to associate positively with choosing to hold assets in the forms of gold and dollars and bank deposits over cash, paddy and rice.

7.5.2 Estimation result and interpretation

Before proceeding to the estimation of the model, two specification tests were carried out. Firstly, we conducted the Hausman test for the IIA assumption of the MNL model. Under the IIA assumption, it is expected that there will not be systematic change in the coefficients if we exclude one of the outcomes from the model (see Hausman and McFadden, 1984). In all the experiments of excluding four different alternatives from the MNL model, the results of the tests showed that we could not reject the null hypothesis of no systematic difference in coefficients of the models at the 5 per cent level. This implies that there is no evidence that the IIA assumption has been violated and the alternatives are

mutually exclusive. Thus, the tests confirmed again that the MNL model is appropriate for use in our case.

Secondly, we conducted the likelihood ratio test that is often used to test between pairs of maximum-likelihood models.[28] The results of the tests showed that, the saving determinants such as number of children, number of old people, education, marital status, gender and age of household head are jointly insignificant in the MNL model at the 5 per cent level. Therefore, they were dropped from the set of explanatory variables of the estimation model. Only wealth, for which non-estate net worth is a proxy, income, the dummy variables of urban/rural, and geographic regions are left in the set of explanatory variables. This result supports surprisingly well our hypothesis about the role of the factors of wealth, income, urban/rural and geographic regions.[29]

The maximum likelihood estimates of the MNL model for the most preferred asset types are reported in Table 7.3. The reference alternative in the regressions is the second alternative - holding assets most in banks.[30] The dependent variables for the three regressions are the logs of the odds of three alternatives versus the reference alternative. In each column of Table 7.3, each coefficient of the regression represents the change in the log of the odds of the dependent variable probabilities resulting from a one-unit increase in

[28] The likelihood ratio test is $\chi^2 = -2(L_R/L_U)$ and has a chi squared distribution, where L_R and L_U are the values of the log-likelihood functions of restricted and unrestricted models respectively. For details, see Judge *et al.* (1985).

[29] Because our data are cross-sectional, we are unable to take into account the effect of interest rates, which may be important for the structure of asset holding of households. Thus, the results of this study can just be regarded as a partial explanation of the behaviour of holding assets of households.

[30] It is worth noting that using any other asset type as reference will give the same results. For the purpose of testing hypotheses and illustration, we report the result using bank deposits as a reference alternative.

the explanatory variable, other variables in the equation held constant. As shown in equation (5), the difference in the coefficients between the columns for each variable is simply the first derivative of the log of the odds of one alternative over the other alternative. Non-estate net worth is used for wealth of households in line of the fact that asset holdings in the form of houses and building were excluded from the four alternative asset types.

Table 7.3: Maximum likelihood estimates of the preferred asset types of households

Variables	*Alternative 1: Gold and dollar*	*Alternative 3: Cash*	*Alternative 4: Paddy and rice*
Log of non-estate net worth	-0.09	-0.61**	-0.30**
	(-1.31)	(-7.96)	(-3.06)
Log of income	0.14**	0.07	0.05
	(2.05)	(0.95)	(0.56)
URBAN	-0.65**	-0.69**	-3.70**
	(-3.86)	(-3.65)	(-6.14)
NORTH	-1.30**	-0.52**	-0.12
	(-8.03)	(-2.97)	(-0.57)
CONSTANT	1.56**	5.67**	2.45**
	(2.13)	(7.12)	(2.43)
Number of observations:	1727		
Pseudo R-squared	0.11		

Note: Holding assets most in bank deposits is the reference alternative.
Z-ratio values are in parentheses; ** and * denote significance levels of 5 and 10 per cent respectively.

Table 7.4: Ranking by the magnitude of the coefficients of the MNL model

	Gold and dollars	*Cash*	*Paddy and rice*
Non-estate net worth	*1*	**3**	**2**
Income	**1**	*2*	*3*
Urban	**1**	**2**	**3**
North	**3**	**2**	*1*

Note: Bank deposits is the reference alternative. The ranking numbers in bold indicate that the coefficient of the explanatory variable is significant. For each explanatory variable, smaller ranking numbers indicate larger magnitudes of the coefficients.

Following the approach of a number of studies, such as, Brown *et al.*, (1980); Meng, (1992); Liu, (1998), the findings of the MNL model in this study are presented by rank according to the magnitudes of the coefficients of the independent variables. The ranking is presented in Table 7.4. Each value of the table reflects the relative impact of a particular independent variable on the probabilities of a household choosing a specific alternative as opposed to the reference alternative - bank deposits.

The estimation results of the MNL model support relatively well our expectation. As shown in Tables 7.3 and 7.4, c*eteries paribus*, an increase in non-estate net worth is likely to make a household choose holding asset types in the following order: bank deposits; gold and dollars; paddy and rice; cash. The finding supports our expectation that the higher

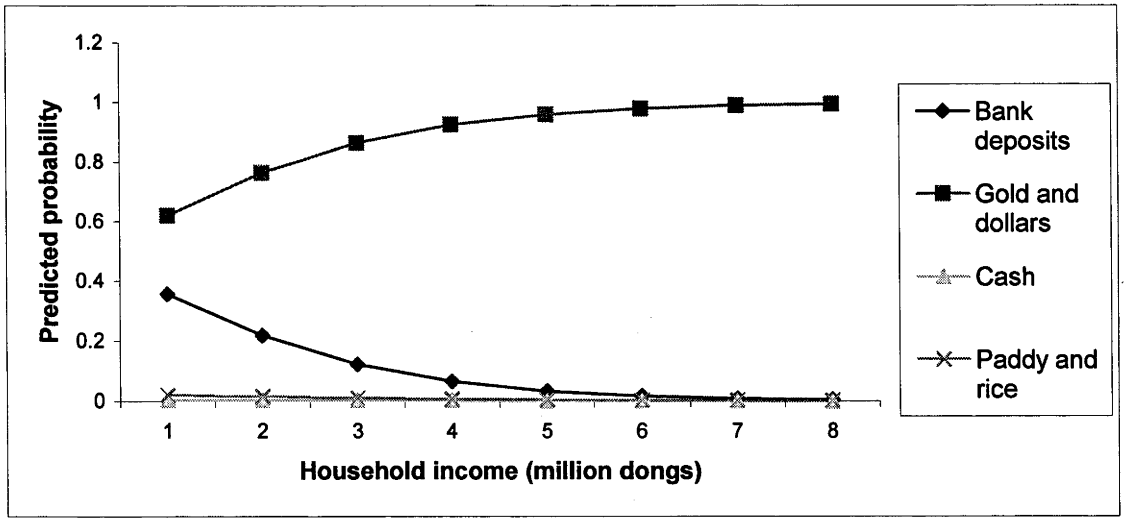
wealth level is associated more with keeping assets in the forms of gold and dollars over cash, and paddy and rice. Increasing non-estate net worth also makes it likely for a household to choose bank deposits over paddy and cash. Bearing in mind that the coefficient of non-estate net worth is insignificant in the regression of gold and dollars as opposed to bank deposits (row 1 and column 1 in Tables 7.3 and 7.4), the answer to the question of what type of the two - bank deposits or gold and dollars - is more favoured by households with higher non-estate net worth is inconclusive.

Income of households was found to be important in affecting the asset holding types but not in all regressions. The coefficient of income is significant only in the regression of gold and dollar vs. bank deposits (row 2 column 1 in Tables 7.3 and 7.4). In term of magnitude, *ceteris paribus,* the higher the income level, the more likely a household will choose asset types following the order: gold and dollars, cash, paddy and rice, bank deposits. As expected, households prefer holding assets in gold and dollars to holding assets in banks when income is higher.

To further investigate the relationship of the two types of asset holdings - gold and dollars, and bank deposits - with income, we calculated the predicted probabilities of choosing different alternatives under the effect of changing income, keeping other variables unchanged at their means. Figure 7.5 describes the changes of the predicted probabilities of choosing four alternatives in response to the changes of the income level. The figure shows that, as income increases, the predicted probabilities of households choosing gold and dollars increases while the predicted probability of choosing bank deposits decreases. The

predicted probabilities of choosing paddy and cash are very small; thus it is difficult to form convincing conclusions about the changes of the predicted probabilities of choosing these alternatives as income increases. The negative relationship between household income and the preference for holding assets in the form of bank deposits suggests that the negative attitudes towards private wealth, and the lack of confidentiality in the operations of the banking system may work against people holding their wealth as bank deposits. This negative relationship is in line with the fact that the banking and financial system is still poorly developed in Vietnam. Apart from saving deposits, there have been very limited options for people to hold their assets in banks and investment funds.

Figure 7.5 Predicted probability of households choosing different types of asset holdings under effect of income



As expected, the urban/rural areas factor was fount to be very important in influencing the choice of asset holdings. The coefficients of this variable appeared to be significant in all the regressions. *Ceteries paribus*, being in urban areas is likely to make a household prefer the following order of asset types: bank deposits, gold and dollars, cash, paddy and rice. This result supports our expectation of preference of choosing gold and dollars, bank deposits over paddy, rice and cash. It is consistent with the fact that urban households on average are richer and are involved mostly with non-agricultural activities. Thus they tend to choose holding assets more in gold and dollars than cash and paddy. The fact that urban households prefer bank deposits most is consistent with the earlier argument that, in terms of accessibility, urban households have benefits from a better network of banks and financial institutions than rural households. From the view point of rural households, the finding also seems quite reasonable in the sense that households in rural areas prefer to keep paddy and rice because they are more cautious about the uncertainty of crops created by natural conditions. In addition, with the lower income level of rural households and a limited market for gold and dollars in these areas, keeping assets in gold and dollars seems less appropriate and, therefore, less popular than keeping cash and paddy and rice.

Geographic regions also influence the way households hold assets. *Ceteries paribus*, households in the southern region were found to be more likely to choose to hold their assets in the following order: gold and dollars, cash, paddy and rice, bank deposits. The result that southern households choose to hold assets more in gold and dollars over bank deposits can be explained by two facts. First, some generations of the population in the

northern region have lived for a considerable time under a socialist regime while the population in the south has not. Thus, households in the south give relatively less credence to the government and the banking system than the population in the north. Second, as households in the southern region on average have higher income than the households in the northern region, the collapse of the network of former People's Credit Funds in the period of 1990 - 91 tended to affect the southern households relatively more than the northern households. While the Agricultural Bank (Agribank) and other financial institutions including rural shareholding banks had not filled the void left by the collapsed network of the credit cooperatives in this period, households in the south may tend to hold a smaller proportion of their assets in banks and financial institutions in comparison with the northern households and thus, hold assets more in gold and dollars.[31]

Overall, the estimation results of the multinomial logit model supported well the hypothesis about the role of the factors of non-estate net worth, income, geographic regions and urban/rural areas on the ways the households choose to hold assets. The level of non-estate net worth, income, and being in urban and southern regions all have positive effects on the likelihood of a household choosing gold and dollars over cash and paddy and rice. The results showed that increasing non-estate net worth is associated with household assets in the forms of bank deposits, gold and dollars rather than as decisions to hold paddy and rice, or cash. An increase in income has a positive effect on choice of gold and dollars over bank deposits. In addition, while increasing income makes the predicted probability of

[31] The development of credit and trading cooperatives in Vietnam can be seen in, for example, Dao and Nguyen (1993) and World Bank (1995).

holding assets in gold and dollars increase, it makes the predicted probability of holding assets in banks decline. Being in urban areas tends to make households more likely to prefer holding assets in banks, gold and dollars than in cash and paddy. Being in southern region is likely to make households choose gold and dollars over other forms of assets. The results of this subsection conform to the observation that richer households hold assets most in gold and dollars and poorer households hold more cash and paddy and rice.

7.6 Conclusion

This chapter has sought to identify the effects of the determinants of saving on the level of wealth, and to elucidate the structure of asset holdings of households in Vietnam.

The econometric results of the model of wealth support relatively well our expectation about the role of the saving determinants on wealth – the accumulated saving of households. The results show that income, age and education of household head and the number of old people in households tend to increase the value of wealth of households. Being in urban areas, being in the southern region and being married also are found to be associated positively with the level of wealth.

Households in Vietnam hold their assets in different types. Apart from real estate, it is found that, on average, households hold the largest fraction of their total non-estate asset value in gold and US dollars. This type of asset or form of saving is far more popular than

the other types including money deposits in banks and financial institutions. Urban households are found to keep a larger proportion of total non-estate assets in gold and dollars, and in banks and keep less in cash, paddy and rice compared with rural areas. Southern households are found to keep more assets in gold and dollars but keep fewer assets in cash and paddy and rice. These conclusions are consistent with the finding that richer households hold more assets in gold and dollars.

The results of the econometric study using the MNL model support our hypothesis about the role of wealth, income, urban/rural areas in the ways in which households choose to hold their assets. Non-estate assets, income, being in an urban area and being in the south makes it more likely for a household to choose gold and dollars over cash and paddy and rice. The preference for holding assets in gold and dollars as opposed to bank deposits is attributed to the increasing income of households and to being in the southern region. The estimation results support the assessment that higher income households hold assets more in gold and dollars, and poor households and rural households hold more cash and paddy and rice. The findings of the MNL model are broadly consistent with the conclusions drawn from the descriptive analysis.

The findings of this chapter highlight some additional aspects of household saving behaviour beyond those discussed in the previous chapters. Together with those found in the previous chapters, the findings of this chapter have some important implications. In the next chapter we will discuss in more detail the implications of these findings.

Appendix 7.1

Definitions of the variables

Total assets:	Total assets of a household, including all housing, physical and financial assets.
Net worth:	Total assets minus total debts of a household.
Non-estate net wealth:	Net worth minus equity in houses.
PY:	Permanent income of a household; estimated on the basis of the earning function of the household at the age of household head equal to 45.
AGE:	Age of household head.
EDUY:	Education of household head; calculated by years of schooling.
NCHILD:	Number of children aged equal to or less than 17.
NOLD:	Number of old people aged greater than 64.
MARRIED:	Dummy for marriage; equals 1 if the household head is married, and 0 if single.
MALE:	Dummy for gender of household head, equals 1 if the household head is male, and 0 if female.
NORTH:	Dummy for geographical region, equals 1 if the household is in the north, and 0 if in the south.
URBAN:	Dummy for household in areas, equals 1 if the household is in an urban area, and 0 if in a rural area.

Appendix 7.2

Summary of variables used in chapter 7

Variables	*Mean*	*Standard Deviation.*
Net worth (million dong)	9686.34	28590.97
Non-estate net worth (million dong)	8758.89	24065.4
Income (million dong)	7998.47	14158.9
PY (million dong)	8700.62	7656.99
AGE	45.40	14.59
EDUY	6.39	4.34
NCHID	1.96	1.67
NOLD	0.27	0.56
MARRIED	0.81	0.39
MALE	0.73	0.44
URBAN	0.20	0.39
NORTH	0.53	0.49

Appendix 7.3

Frequency and percentage of four alternatives of most preferred types of assets

Type of assets	*Frequency*	*Percentage*	*Cumulative percentage*
Gold and dollars	802	46.44	46.44
Banks deposits	250	14.48	60.91
Cash	496	28.72	89.64
Paddy and rice	179	10.36	100
Total	1727	100	

Chapter 8

Conclusion and policy implications

The economic reforms which began in the late 1980s opened the door for individual households to play a more active role in the production and farming processes. The reforms led to the abandonment of the old and inefficient mechanism of production of the cooperatives and made it possible for households to tie their own interests to the land and the means of production. Having rights over management of production, households became independent and more efficient production units and, as a result, they started to earn higher incomes and their living standards improved in almost all regions. In order to achieve the goals of rapid growth and industrialisation of the country, more capital sources, of which household saving is an important component, needed to be mobilised. It is therefore useful and important to investigate the factors that influence household saving. This chapter summarises the main findings of the research on household saving, discusses some policy implications of the findings, and offers recommendations for further research.

8.1 Summary of findings

One of the important findings of the research is that the marginal propensity to save out of income (*mps*) of households in Vietnam is relatively high compared to the average levels in

developing countries. The *mps* of households in Vietnam was estimated to lie in the range of 0.47 to 0.6.

While raising the income level plays a crucial role in raising household saving in both flow and stock terms, higher income seems not always to lead to higher financial saving of households in the banking and financial institutions. This implies that even if the saving of households is higher, this saving will not always translate into higher domestic investment. The important factors that prevent households from keeping their saving in the financial institutions may include caution about inflation and macroeconomic instability. Other factors may be associated with the under-development of the banking and financial system, especially in rural areas.

Young dependent people in households were found to be a significant burden on saving flow. Although children actively participate in the production activities of households, an increasing number of children still causes households to save less. The cost of raising them seems to outweigh the income they may earn. The negative effect of the number of children on household saving flow found in this study is similar to the results for many other developing countries. However, the number of young dependents was found to have no effect on wealth of households.

There is no clear evidence of an impact of the number of old dependent people on household saving flow for the whole sample. However, the impact of the aged dependents was found to be contrary in the case of rural and urban areas: it has a positive impact on household saving in urban areas while it has a negative impact in rural areas. Also, there is

a positive association between the number of aged dependents and the wealth level of households.

Education is an important factor in increasing the saving and wealth of households given the level of income. The finding suggests that while a higher education level helps household heads better manage the financial budget of households under the pressure of uncertainty, and thus save more, precautionary saving may be important. This saving provides households with security against difficult natural conditions and other instability of the economy.

Because of the number of differences in the characteristics of households, including income, level of development, non-agricultural and agricultural activities, etc., in different rural/urban areas and different geographic regions, there is a significant gap between the *mps* of households in rural and urban areas and also between the northern and the southern regions. The *mps* is associated positively with the per capita income level of households. The *mps* of households in the north was found to be lower than in the south, and the *mps* in urban areas was found to be higher than in rural areas.

A higher wealth level was found to be associated with a lower level of saving. This is probably due to the fact that households use assets to lessen the dependence of household consumption on current income. When income declines temporarily, a household can draw on wealth to maintain its consumption level. In urban areas and the southern region, where households are relatively rich compared with rural areas and the northern region respectively, the household asset level appeared to be important.

Marital status has a significant positive effect both on saving and wealth of households. Both marital status and the gender of household heads were found to have an effect on the level of saving flow. However, while marriage was found to be important in influencing wealth of households, gender was found to be unimportant. Being married increases household saving in both flow and stock terms. Being female seems to be positively associated with household saving flow.

Households in Vietnam hold their assets in many types but they hold most in gold and dollars. Deposits in banks and financial institutions, cash, and paddy and rice are the next most popular types. Being in urban areas was found to be positively associated with a higher wealth level of households and urban households hold a higher proportion of assets in gold and dollars and bank deposits and a smaller proportion in cash, and paddy and rice than in rural areas. Similarly, being in the south is positively associated with a higher level of wealth, and southern households hold more assets in gold and dollars and less in cash, and paddy and rice than northern households.

It was found that wealth, income, urban/rural areas and regional factors have a significant effect on the forms in which households hold their assets. Higher income and wealth, being in urban areas or in the south, make it more likely for households to hold gold and dollars over cash, and paddy and rice. Holding assets more in gold and dollars as compared with deposits in banks and financial institutions seems to be related to the different level of income of households as well to being located in the south. Being in an urban area tends to

make households choose to hold assets in banks, gold and dollars in preference to cash and paddy and rice.

Finally, the study suggests a way of modeling the household as a unit in developing countries, where the extended household is typically a prominent feature. The model used here, based on the Life Cycle Hypothesis and the Becker-style approach to home production, is an attempt to provide a more rigorous theoretical background for empirical studies on household saving and household behaviour in general. By allowing the model to distinguish between aged dependents and children involved in home production, it is possible to consider the influence of various factors that determine household saving.

8.2 Policy implications

Vietnam is developing and changing its economic policies. In this section we comment on how particular policies might affect household saving.

8.2.1 The effect of short term policies

One striking finding of the research is that households in Vietnam have a relatively high *mps* but they keep a low proportion of their accumulated saving in financial institutions in comparison with gold and dollars. In other words, there seems to be significant financial resources held by the population that are not yet mobilized by financial institutions. Because of inflation, high uncertainty and under-development of the financial system, which are quite common factors in developing countries, households often tend to keep

their saving in the safest forms of gold and dollars. The study suggests that policies that aim at improving the stability of the economic and investment environment, as well as the role and the quality of services of the banking system and financial institutions, will be very helpful for mobilising financial saving by households. Policies that stabilise the macroeconomic environment are important because such stability will create confidence among households in financial institutions and help households put behind them the fear of hyperinflation. Appropriate interest rates with returns higher than the rate of inflation are also important and necessary.

A policy for allowing competition in the financial sector in order to improve the quality of service, including helping households to gain easier access to banks and financial institutions, will play a positive role in mobilising household saving. Giving equal opportunity to all players, such as private banks, joint venture banks, and all other financial institutions, including small credit funds and associations in rural areas, to compete fairly with each other would be appropriate for the development of adequate bank networks and improving the quality of service. The less competition is restricted, the more the quality of the service of these institutions should improve and the more branches are likely to appear in remote areas. Financial policies should be liberalised to allow for more financial institutions to be established in rural areas. With such competition and liberalisation, not only could more saving be mobilised for investment, but also households themselves could enjoy better credit networks to assist the expansion of their own production. It is important for households to have many options for investing and saving. Allowing households to deposit gold and US dollars in banks and financial institutions is one such option. The

establishment of a stock exchange is another. However, to date, preparations for opening a stock market have been quite slow.

8.2.2 The effect of medium and long term policies

The results of the study imply that population growth is a serious burden on saving. Although the population growth rate in Vietnam was reduced to around 2 per cent p.a. in 1995 (Bui Duong Nghieu 1999: 31) and to 1.8 per cent p.a. in 1999 (Reuters Business Briefing January 2000), it is still high in comparison with the world and with the more developed countries. The average level of population growth was 1.5 per cent p.a. for all countries and only 0.2 per cent p.a. for industrial countries. Vietnam also has a young population: the population aged under 20 years comprises about 49 per cent of the total (Tran Hoang Kim 1996: 146). While the young population is an important source of labour for the future, the large proportion of young people at present is a significant obstacle for households in raising their income and living standards. Therefore, policies aiming to reduce the dependency burden will play an important role in raising household income and household saving.

Reducing population growth has long been a primary government goal. Programs of population development and family planning education that have long been implemented are examples. Thus, improving the effectiveness of family planning education, programs of birth control, and propaganda measures for lowering population growth will remain important for reducing the dependency burden. In parallel with family planning education and birth control programs, the government's indirect policies to encourage family

planning, especially in rural areas, will also be useful. Subsidy cuts or reduction of social assistance to households that do not follow the family planning program might be included in these measures.

Better educated households were found to save more. In addition, the study shows that the impact of the education factor is stronger for poorer households. This finding supports the policy of the government to raise its investment in education, particularly in rural areas and poor regions in order to raise household saving in the long term. For the poor households, spending on education is a significant burden. The government therefore should have adequate policies for providing basic education so that the burden on the poor of financing education is reduced. More funds for schools and a higher number of teachers assigned to rural and remote areas would be useful for raising the education levels of the rural population.

There are significant differences in the characteristics and the patterns of income and saving between the different geographic regions and between urban and rural areas. In order to raise the income and saving level of the poor areas, the problem of a widening poverty gap between the rural and urban areas needs to be taken into account. According to the World Bank (1999a), even though the percentage of population living below the total poverty line has substantially declined between 1993 and 1998, 45 per cent of the rural population still lives below the poverty line, while the incidence of poverty in urban areas

is just less than 10 per cent.[32] Over 90 per cent of the poor are resident in rural areas. During 1993-95, the ratio of urban to rural expenditures increased from 1.8 to 2.2. In addition, it was also found that poverty is deeper in the northern region, while the southern region, especially the south-east region, which includes Ho Chi Minh City, was found to be the wealthiest region. Because of the widening income and poverty gaps, it is very important for the government to pay attention to issues of regional development when making policies designed to raise income. The policies of public spending of the government should target more effectively the poor regions and areas. The government policies also need to focus on using the advantages and mobilising the strengths of each region and area, and on using economic measures to encourage households to raise investment and the production of various agricultural products, and thus, consequently, raising income and saving of the households.

8.3 Research extension

This dissertation has some shortcomings. The most important one is that it is a cross-sectional study, and thus is a snap-shot analysis of a period. It is well known that for a country in transition from an old mechanism to a new one with the economic reforms being undertaken, many changes in the economy have occurred and are still to take place. Therefore, an analysis of a short period cannot provide a whole picture of the changing economy including household saving. The second shortcoming is that the empirical study

[32] The World Bank has set a standardised poverty line for Vietnam that is comparable to those in other developing countries. An estimate of the national weighted average poverty line of VND 1,090 per person per year is based on a benchmark per capita calorie requitement of 2,100 calories per day. The prevalence of poverty is considerably higher in Vietnam (51 per cent) than in China (9 per cent), Indonesia (15 per cent), Philippines (21 per cent) and Thailand (16 per cent) (World Bank, 1995b).

did not take into account the effect of bequests and precautionary saving in households, which are believed to be important in the case of developing countries like Vietnam.

The shortcomings point to some encouraging areas for further research. One of these is to use the data of the second round of the Vietnam Living Standards Survey to investigate further the determinants of household saving. The second round of the survey was completed at the end of 1999. The second round of the survey will provide additional useful information on changes related to household life in general, and household saving in particular. Using this new information for studies on household saving will allow comparisons with the current one and, thus, help to capture more aspects of the changing patterns of economic behaviour of households under the reforms.

The second area to which the research on household saving can contribute is to investigate the effect of bequests and precautionary saving on household saving. These motives for saving have been given increasing attention in the literature. It would be useful to conduct an empirical study to analyse the effect of bequest and precautionary saving on household saving. However, to carry out such an empirical study, information on these variables must be available. The questionnaires for subsequent household surveys should include direct questions concerning bequests or transfers among generations of households and precautionary saving. This information would help to enrich our knowledge about their relationship to the saving behaviour of households in developing countries.

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